



COMMANDbatch

Fieldbus Controller Setup Guide

Last Updated
10/19/15

COMMANDbatch V1.8.1.0 & Later

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Introduction

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[Purpose](#)

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Purpose

This document explains how to configure commercially available network-based distributed IO hardware to be used with COMMANDbatch instead of the E-Z Cal J-Box and Manual Station.

Audience

This guide is intended to be used by Command Alkon installation and service personnel, as well as plant personnel authorized to install and configure COMMANDbatch.

Revision Summary

Date	CMDbatch Version	Revision
Apr. 13, 2011	1.8.0.0	Document created. (Originally titled "External Ethernet/IP Device Setup Guide".)
Jun. 21, 2011	1.8.1.2	<ul style="list-style-type: none">Document title changed to "Open Solutions Device Setup Guide".Added setups for Allen-Bradley 1794-AENT controller.
Jul. 6, 2011	1.8.1.2	Changed all instances of "Open Solutions" to "Open Solution".
Jul. 28, 2011	1.8.1.3	<ul style="list-style-type: none">Reorganized the document.Added initial setups for Phoenix Modbus and Phoenix Ethernet/IP controllers.
Aug. 25, 2011	1.8.1.3	<ul style="list-style-type: none">Consolidated COMMANDbatch setups.Added IP setups for the Allen-Bradley 1738 and 1794 AENT controllers.Described supported controllers, IO modules, valve drivers, and LED indicators.Provided descriptions of all connector wiring.
Sep. 1, 2011	1.8.1.3	Added a section describing how to configure the Allen-Bradley AB_ETH Driver.
Sep. 15, 2011	1.8.1.3	Removed sections on Allen-Bradley 1738 for now.

Oct. 5, 2011	1.8.1.3	Added a section on setting the IP Address for Allen-Bradley 1794-AENTs.
Oct. 7, 2011	1.8.1.3	<ul style="list-style-type: none"> Added the sections on the Allen-Bradley 1738 back to the document. Restructured the document to be easier to use, including finding troubleshooting information.
Oct. 10, 2011	1.8.1.3	Added section on updating the firmware for Allen-Bradley 1738-AENTs.
Oct. 25, 2011	1.8.2.0	Added list of approved and legacy scale indicators.
Nov. 7, 2011	1.8.2.0	Corrected the list of approved scale indicators.
Nov. 28, 2011	1.8.3.0	<ul style="list-style-type: none"> Changed the name of this document to Fieldbus_Controller_Setup. Moved setups for scale indicators to a new Externan_Scale_Setup document. Moved list of approved hardware to a new OpenSolution_HardwareList document.
Feb. 15, 2012	1.8.4.0	Added setups for the Omron CJ2M-CPU31 controller.
Mar. 30, 2011	1.8.4.0	Corrected setups for moisture probes with COMMANDbatch Integra systems.
May 30, 2012	1.8.4.3	Added the recommendation that the last octet of the IP Addresses for Fieldbus Controllers, Phoenix EIP, and Flex I/O EIP range from .10 to .19.
Jul. 6, 2012	1.8.4.3	Added sections on backing up and restoring data for the Omron CJ2M-CPU31.
Sep. 19, 2012	1.8.4.3	Added notes that specify the range of IP Addresses for Fieldbus Controllers, Phoenix EIP or Flex I/O EIP.
Oct. 24, 2012	1.8.4.3	Added Input Voltage, Pulse Rate, and Duty Cycle specifications for the Phoenix EIP.
Dec. 17, 2012	1.8.4.3	Added a section on upgrading the Phoenix IL EIP BK firmware.
Jan. 14, 2013	1.8.4.3	Added sections on Input Voltage, Pulse Rate, and Duty Cycle for the Allen-Bradley 1794-AENT and Omron CJ2M-CPU31 controllers.
Feb. 7, 2013	1.8.4.3	Added section on calibrating a Hydronix moisture probe used with COMMANDbatch Integra systems.
Mar. 15, 2013	1.8.5.3	Modified Belt Warning Horn drawing to show Switched L1 (1021) for Integra systems.
Dec. 16, 2014	1.8.11.0	Corrected "COMMANDbatch Setups - EtherNet IP Devices" section to state that Register Addresses are assigned on the Edit tab (used to be the PLC tab) of the IO Assignments form.
Jul. 21, 2015	1.9.0.0	Updated cover/title page.

Sep. 22, 2015	1.9.0.0	Added a section that lists IP Addresses to be used with components/hardware that connect to COMMANDbatch.
Oct. 19, 2015	1.8.11.6 1.9.0.0.	Added important note about entering -r in the Diag Flags field on Interface Parameters for devices that use Phoenix V1.12 firmware.

Fieldbus Controllers - Setup

Note: This document describes how to configure Fieldbus Controllers in COMMANDbatch. For information about setting up Scale Indicators, see the [Scale_Indicator_Setup.pdf](#).

COMMANDbatch-OS allows COMMANDbatch to control concrete plants via industrial computer network protocols (currently EtherNet/IP) using hardware platforms other than those provided by Command Alkon. Within limits, customers can purchase the COMMANDbatch software and related services from Command Alkon then provide their own distributed IO hardware from suppliers with whom they have established relationships.

In these configurations, the familiar Command Alkon E-Z CAL system (consisting of a proprietary wiring junction box and a manual station) is replaced by a redesigned wiring junction box containing commercially available network-based distributed IO hardware. (See the [OpenSolution_HardwareList.pdf](#) for a list of approved hardware.)

Standalone manual station controls are not included, but customers can supply new controls, use existing controls, or use the Software Manual Station (SMS) with a mouse or optional touchscreen.

COMMANDbatch-OS is available in a variety of standard configurations based on the number of IO points required; however, the configuration can be changed and expanded over time.

COMMANDbatch Setups - EtherNet/IP Devices

Note: See the [Scale_Indicator_Setup.pdf](#) for COMMANDbatch setups for supported scale indicators.

1. Create a new record on the the Interface Parameters form.

- Enter/verify the following information on the top part of the form.

Interface	Name for the Interface
Desc	(Optional)
Type	Select "PLC / Fieldbus IO".
Connection	"Ethernet TCP/IP", the only choice, is already selected.
Control Node	"1" is selected by default for a single-node system. For a multi-node system, select the appropriate node.
Desc	(Optional)
In Use	Leave this box checked.
RTC Port	Checked and grayed out by default.
Fieldbus Type	EtherNet/IP
Diag Flags	For Phoenix V1.12 firmware, make sure you enter the following Diag Flag option in this field to ensure that the IO function properly in case of a network disconnection: -r (eip_scan restarts when the device is disconnected)

- On the Common tab, enter/verify the following information.

Trace Type	Select the type of debugging (Error Logs, None, Performance, or Verbose Error Logs). Defaults to "None".
Unit#	Automatically increments to the next available unit number for Manual Stations and PLC devices (with Manual Stations numbered first, followed by PLC devices).
IO Poll	Seconds between times that COMMANDbatch polls the IO. Set this to .010. Set it to .020 for the Phoenix ILC150.
Input Register Poll	Seconds between times that COMMANDbatch polls the Input Register. Typically set to .060
Holding Register Poll	Seconds between times that COMMANDbatch polls the Holding Register. Typically set to .060
Registers (Always Send)	Uncheck this box so that data will only be recorded if it has changed.

- On the TCP/IP tab, enter/verify the following information.

IP Address	Enter the IP Address of the Interface. (IP Addresses should range from 192.168.77.10 - 192.168.77.19 for Fieldbus Controllers, Phoenix EIP or Flex I/O EIP. For a complete list of allowable IP Addresses, see IP Address Assignments .)
IP Port	Enter 502

- 2. Save your changes and close the Interface Parameters form.**
- 3. On the Edit tab of the IO Assignments form, assign Register Addresses to each IO Point using the patterns provided in the section on [Register Address Naming Patterns for Fieldbus Controllers](#).**

Note: Most Integra systems did not include a physical Manual Station or Control Panel. If you want to manually activate IO points, you can configure a Soft Manual Station (SMS). See the "Remote Batching / SMS Setup Guide" for more information.

- 4. Save your changes and close the IO Assignments form.**
- 5. On the Calibrations form, create a calibration record for each device in the Interface.**
 - In the Display Source field, select the appropriate Interface Parameter.
 - In the Channel Number field, enter a number that identifies the device.
 - In the Channel Name field, enter a name for the channel assigned to the device.
 - In the Type field, select one of the following, depending on the device: Counter, Generic, or Probe.
 - Enter a Grad Size that can be used to convert the raw data to a human-readable value.
 - For Moisture Probes, enter .010.
 - Enter a Max Capacity that sets the upper limit of allowable readings.
 - On the Registers tab, select the IO Point(s) for each device.
- 6. Save your changes and close the Calibrations form.**
- 7. A message prompts you to restart the RTC. Click Restart Now.**
- 8. (Moisture Probes Only):**
 - In the Probe field on the Control tab of the Bins/Silos form, select the moisture probe calibration record created above.

- On the Qualities tab of the Materials form, enter an Absorption percentage, if known.

Note: The Absorption field sets the percentage of moisture above Oven Dry weight needed to achieve SSD (Saturated Surface Dry) weight.

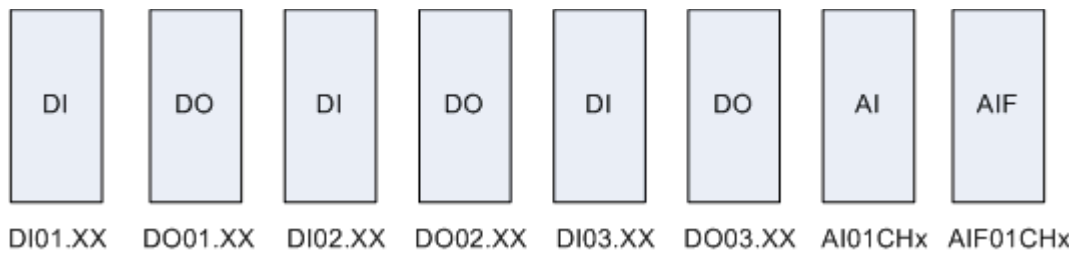
- On the Limits tab of the Materials form, enter percentages in the Min Moisture and Max Moisture fields.



Additional Setups:

- For COMMANDbatch Integra systems, Calibration records may need to be created for Metered Feeds and Moisture Probes, and a belt warning horn must be configured.
(See [COMMANDbatch Setups - Additional for Integra](#) for details.)
- For standard Moisture Probes, see the [MoistProbe_CMDbatch.pdf](#).
- For PWS, see the [PrecisionWaterSystem_CMDbatch.pdf](#).

Register Address Naming Patterns for Fieldbus Controllers



Where:

- DI=Digital Input, DO=Digital Output, AI=Analog Input, AO=Analog Output, AIF=Analog Input Float
- XX is the Bit Number (01, 02, 03... up to 16 or 32 or 64, depending on module size) assigned to an IO point. Example: DI01.01
- AI and AO modules are tagged the same way as DI and DO modules except they contain 1 to x channels specified as CH1, CH2, etc. Example: AI01CH1 (for scale data displayed as integers only)
- AIF is used for scale indicators that display data with decimals. Example: AIF01CH1

- Notes:**
- IO Modules can be plugged into the backplane in any order because the software counts each module type from left to right (01, 02, 03, etc.).
 - The Phoenix IL EIP BK Communications Module contains integrated DI and DO which include the first module of each type (DI01.XX and DO10.XX).

COMMANDbatch Setups - Additional for Integra

Additional COMMANDbatch setups for COMMANDbatch Integra systems include creating Calibration records for Metered Feeds and Moisture Probes, and adding a belt warning horn circuit.

Topics

[Metered Feeds](#)

[Moisture Probe Setup](#)

[Moisture Probe Calibration](#)

Metered Feeds

1. On the Calibrations form, create a new record and enter the following information:

- a) At the top of form:
 - The Interface Parameter that was created earlier
 - Channel Number: Counter 1=1, Counter 2=2, Counter 3=3, etc.
 - Channel Name: Whatever you want it to be
 - Type: Counter
- b) On the Calibrations tab:
 - Grad Size: Must match the Grad Size of the physical meter
 - Max Capacity: 99999

Note: Make sure the units match the units of the physical meter.

Metered Feed Calibration Record - Calibrations tab

The screenshot shows the 'Calibrations' window with the 'Calibrations' tab selected. On the left is a table listing various channels. On the right is a form for creating or editing a calibration record.

	Display Source	Channel	Channel Name
1	IND780	13	SCALE 1
2	IND780	14	SCALE 2
3>>	Integra	1	WAT COUNT 1
4	Integra	2	ADX COUNT 1
5	Integra	3	ADX COUNT 2
6	Integra	4	ADX COUNT 3
7	Integra	5	ADX COUNT 4
8	Integra	6	ADX COUNT 5
9	Integra	7	ADX COUNT 6
10	Integra	8	ADX COUNT 7
11	Integra	9	ADX COUNT 8
12	Integra	10	PROBE 1
13	Integra	11	FIBER PULSE
14	JagXtreme	15	Jag Scale 1
15	SERSCALE	1	SSCALE2
16	SERSCALE	16	SSCALE1
*			

Form fields on the right:

- Display Source: Integra (dropdown)
- Control Sys: Sys1 (dropdown)
- Control Node: 1 (dropdown)
- Channel Number: 1 (text box)
- Type: Counter (dropdown)
- Change Count: 139 (text box)
- Channel Name: WAT COUNT 1 (text box)
- Remote Display: (empty dropdown)
- Calibrate button

Calibration tab sub-tabs: Calibration | Counters | Registers | Labels | History | Probe | Diag

Grad Size: 1.000 (text box) Max Capacity: 9,999,000 (text box) gl (dropdown)

Raw Counts: 0 (text box) Scaled Value: 0 (text box) lb (dropdown)

Motion Range Grads: 0 (text box)

Last Calibrated Time: 2/28/2011 02:08:00 PM By: sa (text box)

- c) On the Counters tab:

- Meter Input (the Input IO point where the physical meter input is terminated in the J-Box)

Metered Feed Calibration Record - Counters tab

	Display Source	Channel	Channel Name
1	IND780	13	SCALE 1
2	IND780	14	SCALE 2
3 >>	Integra	1	WAT COUNT 1
4	Integra	2	ADX COUNT 1
5	Integra	3	ADX COUNT 2
6	Integra	4	ADX COUNT 3
7	Integra	5	ADX COUNT 4
8	Integra	6	ADX COUNT 5
9	Integra	7	ADX COUNT 6
10	Integra	8	ADX COUNT 7
11	Integra	9	ADX COUNT 8
12	Integra	10	PROBE 1
13	Integra	11	FIBER PULSE
14	JagXtreme	15	Jag Scale 1
15	SERSCALE	1	SSCALE2
16	SERSCALE	16	SSCALE1
*			

Display Source: Control Sys: Control Node:
 Channel Number: Type: Change Count:
 Channel Name: Remote Display:

Calibration Counters Registers Labels History Probe Diag
 Meter Input:

2. Select the counter calibration created above in the Meter Source field of the Metered Feeds form.

	Feed	Material	Goes To
1 >>	ADMIX01	AIR1	BOTTLE01
2	ADMIX02	MR-A+	BOTTLE02
3	ADMIX03	WR	BOTTLE03
4	ADMIX04	NC	TRUCK
5	ADMIX05	CC	TRUCK
6	ADMIX06	SUPER-P	TRUCK
7	ADMIX07	MR	BOTTLE07
8	ADMIX08	RET	BOTTLE08
9	ADMIX09	AIRPOZ	BOTTLE01
10	ADMIX10	WRX	TRUCK
11	FIBER01	B509	TRUCK
12	FIBER02	B512	TRUCK
13	WATERM01	WATER	TRUCK
*			

Feed: Material: Goes To:
 Desc:
 Meter Source: Grad Size: Capacity:
 Control I/O Feed Flow Meter B History Diag
 Allow Early Feed ☒ Start Delay: sec.
 MMM Enabled ☒
 Multi-Batch ☒
 Bar Graph Color:
 Trace Type:
 RTC Alias:

Moisture Probe Setup

3. On the Calibrations form, create a new record and enter the following information:
 - a) At the top of form:
 - The Interface Parameter that was created earlier
 - Channel Number: Use the next available number after the Counters.
 - Channel Name: Whatever you want it to be
 - Type: Probe
 - b) On the Calibrations tab:
 - Grad Size: 0.010

- Max Capacity: 20.00
- Unit: %
- Slope: 0.064
- Y-Intercept: 0.000

Moisture Probe Calibration Record - Calibrations tab

Display Source	Channel	Channel Name
1	IND780	13 SCALE 1
2	IND780	14 SCALE 2
3	Integra	1 WAT COUNT 1
4	Integra	2 ADX COUNT 1
5	Integra	3 ADX COUNT 2
6	Integra	4 ADX COUNT 3
7	Integra	5 ADX COUNT 4
8	Integra	6 ADX COUNT 5
9	Integra	7 ADX COUNT 6
10	Integra	8 ADX COUNT 7
11	Integra	9 ADX COUNT 8
12 >>	Integra	10 PROBE 1
13	Integra	11 FIBER PULSE
14	JagXtreme	15 Jag Scale 1
15	SERSCALE	1 SSCALE2
16	SERSCALE	16 SSCALE1

Display Source: Integra Control Sys: Sys1 Control Node: 1
 Channel Number: 10 Type: Moisture Probe Change Count: 183
 Channel Name: PROBE 1 Remote Display:
 Device: BIN01 Material: NATSAND
 Calibration Counters Registers Labels History Probe Diag
 Grad Size: 0.010 Max Capacity: 20.000 %
 Raw Counts: 176 Scaled Value: 2.01 %
 Motion Range Grads: 0
 Slope: 0.064 Y-Intercept: 0.000
 Calibration Type: Slope Intercept
 Last Calibrated Time: 4/18/2011 09:41:25 AM By: MPH

c) On the Registers tab:

- Physical IO Low (IO point for the probe)

Moisture Probe Calibration Record - Registers tab

Display Source	Channel	Channel Name
1	IND780	13 SCALE 1
2	IND780	14 SCALE 2
3	Integra	1 WAT COUNT 1
4	Integra	2 ADX COUNT 1
5	Integra	3 ADX COUNT 2
6	Integra	4 ADX COUNT 3
7	Integra	5 ADX COUNT 4
8	Integra	6 ADX COUNT 5
9	Integra	7 ADX COUNT 6
10	Integra	8 ADX COUNT 7
11	Integra	9 ADX COUNT 8
12 >>	Integra	10 PROBE 1
13	Integra	11 FIBER PULSE
14	JagXtreme	15 Jag Scale 1
15	SERSCALE	1 SSCALE2
16	SERSCALE	16 SSCALE1

Display Source: Integra Control Sys: Sys1 Control Node: 1
 Channel Number: 10 Type: Moisture Probe Change Count: 183
 Channel Name: PROBE 1 Remote Display:
 Device: BIN01 Material: NATSAND
 Calibration Counters Registers Labels History Probe Diag
 Calibrated IO:
 Physical IO Low: PROBE1.1
 Physical IO High:
 FieldBus Parameter 1: 0
 FieldBus Parameter 2: 0

4. Select the probe calibration created above in the Probe field of the Bins/Silos form.

	Bin	Material
1>>	BIN01	NATSAND
2	BIN02	#57-GVL
3	BIN03	#8-GVL
4	SILO01	CEM1-SILO2
5	SILO02	CEM1-SILO1
6	SILO03	FLYFC
7	SILO04	GGBFS100

Bin: BIN01 Material: NATSAND Goes To: AGG SCALE

Desc: Active ☒ Default ☐ Capacity: 0 lb

Control | I/O | Fast | Flow | Timed | Jog | History | Diag

Allow Early Feed ☒ Start Delay: 0.00 sec.

MMM Enabled ☒ Probe: PROBE 1

Multi-Batch ☒ Bar Graph Color: Trace Type: None

Drop History Enabled ☒ Max Gate Close Time: 0.00 sec. RTC Alias: BIN01

Force Gate Closed ☐

Moisture Probe Calibration

After bake-out is complete, probe calibration is accomplished by modifying the Y-Intercept value for the probe on the Calibrations form.

Note: The starting slope for Hydronix moisture probes connected to Allen-Bradley hardware should be 0.062.

Example:

Say the probe is reading 5.00% on the SMS.

You perform a bake-out and determine that the moisture reading should be 4.00%.

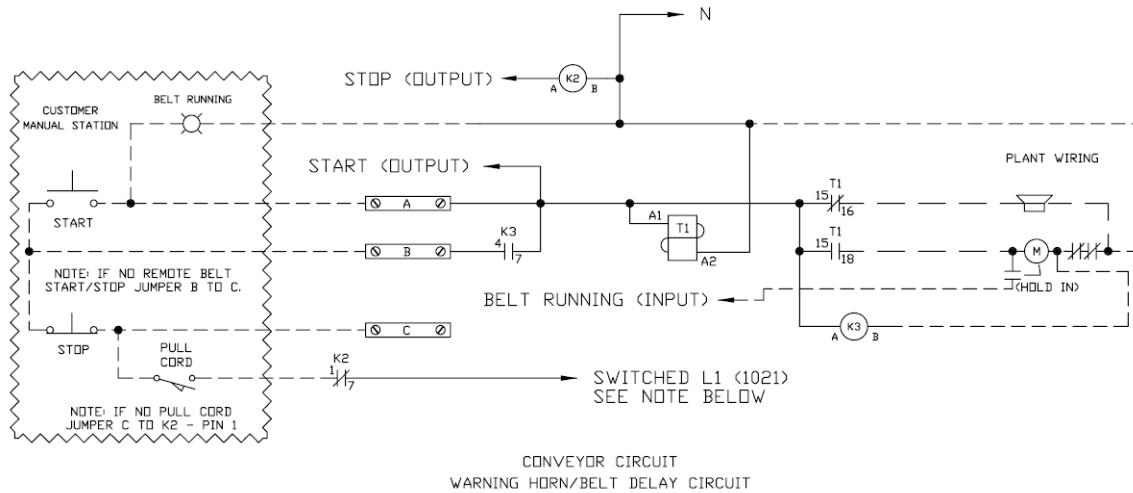
You would then:

1. **Open the Calibrations form and select the probe's calibration record.**
2. **Click the "Calibrate" button located in the upper right portion of the form.**
3. **Select YES when the calibration warning message appears.**
4. **Subtract 1.00% from the "Y-Intercept" value and save your changes.**

The moisture reading on the SMS should now be 4.00%.

Belt Warning Horn Safety Circuit

To comply with OSHA and Command Alkon safety requirements, you might need to add a Belt Warning Horn Circuit to the Integra J-Box. (See the following wiring schematic.)



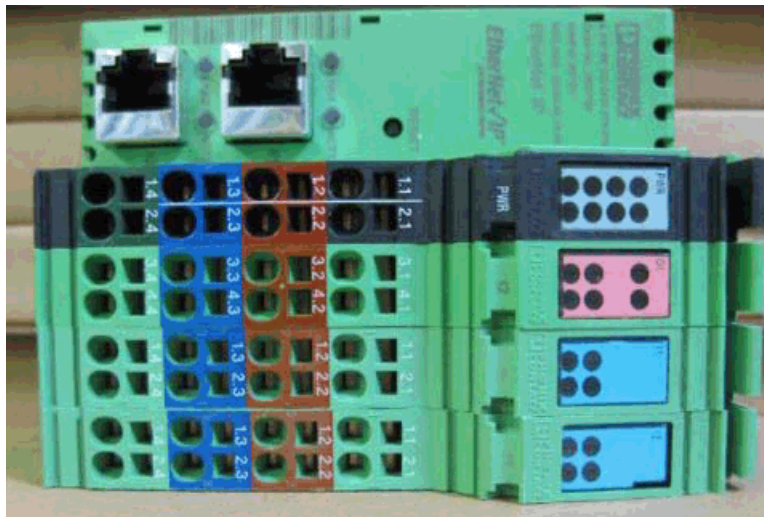
NOTE:
1021 IS THE TERMINAL IN THE INTEGRA BOX
FOR THE SWITCHED L1.

Phoenix EtherNet/IP Bus Coupler

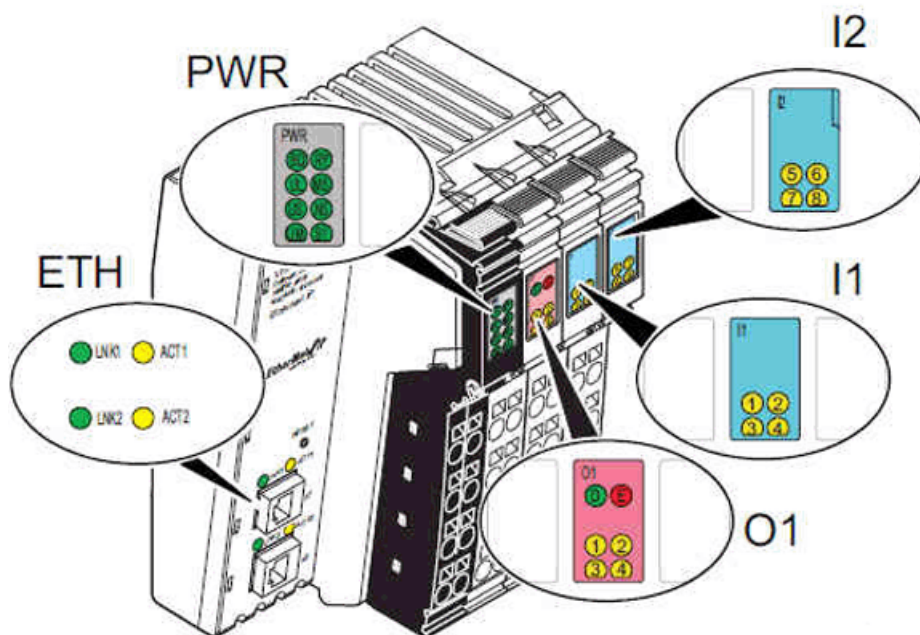
Newer PWS systems use the Phoenix EtherNet/IP Bus Coupler (top of following photo), which connects to a black Power module and Output and Input modules under that.

The Phoenix EtherNet/IP Bus Coupler requires separate IP Address configuration which is normally done at the Command Alkon factory. If you purchase the "EtherNet/IP™ Made Easy" software to do this yourself, refer to the "Phoenix EtherNet/IP Bus Coupler - IP Setup" section of this manual.

Phoenix EtherNet/IP Bus Coupler



Phoenix EtherNet/IP Bus Coupler Indicator LEDs



During normal operation of the EtherNet/IP Bus Coupler:

- The Green LEDs in the PWR area will be illuminated as follows:

BO LED off	RY LED on
UL LED on	MS LED on
US LED on	NS LED on
UM LED on	S1 LED off

- The Output LEDs on the EtherNet/IP Bus Coupler do not indicate polling by the RTC. If the RTC stops polling the EtherNet/IP Bus Coupler, the RY and NS LEDs will flash Green.
- Above the Ethernet Connector, the LNK GREEN indicator should be illuminated and the YELLOW ACT indicator should be blinking.

Descriptions of EtherNet/IP Bus Coupler Indicator LEDs

LED	Color	Meaning	State and Description
ETH			
LNK1	Green	Link at port 1	ON - Link connection at port 1 present OFF - Link connection at port 1 not present
LNK2	Green	Link at port 2	ON - Link connection at port 2 present OFF - Link connection at port 2 not present
ACT1	Yellow	Activity on port 1	ON - Data transmission on port 1 active OFF - Data transmission on port 1 not active
ACT2	Yellow	Activity on port 2	ON - Data transmission on port 2 active OFF - Data transmission on port 2 not active
PWR			
BO	Green	Boot	ON - Boot loader active, firmware started Flashing - Waiting for BootP/DHCP reply OFF - Firmware started successfully
UL	Green	ULogic	ON - 24 V communications supply / 7.5 communications power present OFF - 24 V communications supply / 7.5 communications power not present
US	Green	USegment	ON - 24 V segment circuit supply present OFF - 24 V segment circuit supply not present
UM	Green	UMain	ON - 24 V I/O supply present OFF - 24 V I/O supply not present
RY	Green	Ready	ON - Connection to a process data client established Flashing - Firmware ready to operate OFF - Firmware not active

LED	Color	Meaning	State and Description
MS	Red/Green	Module status	Green ON - Normal operation Red ON - Unrecoverable error Flashing Green: -- Device not configured, or device configuration not complete or faulty -- Device in standby mode Flashing Red - Recoverable error Flashing Red/Green - Self-test OFF - No supply voltage
NS	Green/Red	Network status	Green ON - Module is online and has established a connection Red ON - Error preventing communication with the network (e.g., bus offline or double MAC ID) Flashing Green: -- Device online, connections not established -- Device has finished the "double MAC ID" test but has not established connections to other nodes Flashing Red - One or more connections in timeout state Flashing Red/Green - Self-test OFF: -- Device not online -- Device has not yet finished the "double MAC ID" test -- Device has no IP address or is not supplied with voltage
S1	Green	Boot source status	ON - IP parameters received from BootP/DHCP server Flashing - BootP request/responses in process OFF - Stored IP parameters are used
O1			
D	Green	Diagnostics	ON - Data transmission within the station active Flashing - Data transmission within the station not active
E	Red	Error	ON - Short circuit/overload of outputs OFF - No short circuit/overload of outputs
1-4	Yellow	O1...O4	ON - Outputs active OFF - Outputs not active
I1, I2			
1-8	Yellow	I1...I8	ON - Inputs active OFF - Inputs not active

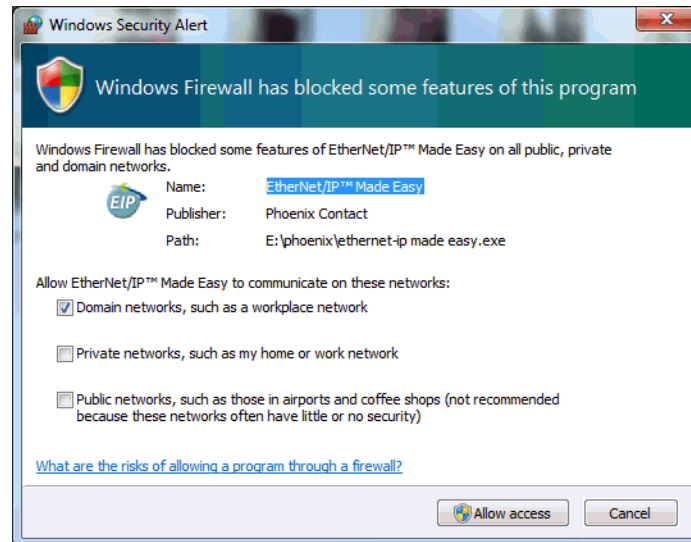
Phoenix EtherNet/IP Bus Coupler - IP Setup



Assumption:

The following procedure assumes that the bus coupler and IO modules are mounted, that the network and power cables are connected, and that the unit is communicating with COMMANDbatch.

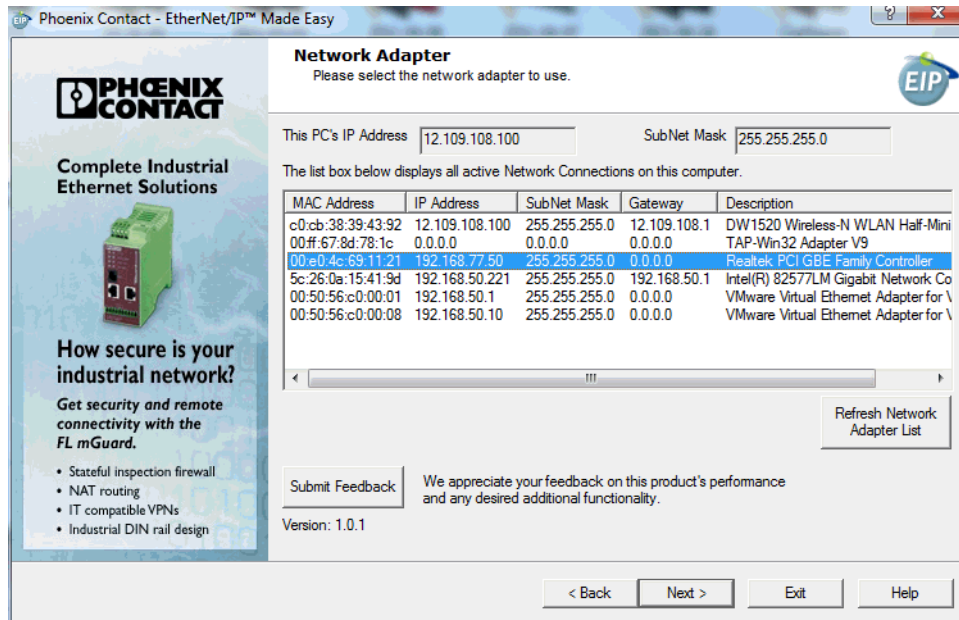
1. Open the “EtherNet/IP Made Easy” application.



2. In Windows 7, you will have to “Allow access”.



3. Click Next.



Phoenix Contact
Complete Industrial Ethernet Solutions

How secure is your industrial network?
Get security and remote connectivity with the FL mGuard.

- Stateful inspection firewall
- NAT routing
- IT compatible VPNs
- Industrial DIN rail design

Network Adapter
Please select the network adapter to use.

This PC's IP Address: 12.109.108.100 SubNet Mask: 255.255.255.0

The list box below displays all active Network Connections on this computer.

MAC Address	IP Address	SubNet Mask	Gateway	Description
c0:cb:38:39:43:92	12.109.108.100	255.255.255.0	12.109.108.1	DW1520 Wireless-N WLAN Half-Mini
00:ff:67:8d:78:1c	0.0.0.0	0.0.0.0	0.0.0.0	TAP-Win32 Adapter V9
00:e0:4c:69:11:21	192.168.77.50	255.255.255.0	0.0.0.0	Realtek PCIE GBE Family Controller
5c:26:0a:15:41:9d	192.168.50.221	255.255.255.0	192.168.50.1	Intel(R) 82577LM Gigabit Network Co
00:50:56:c0:00:01	192.168.50.1	255.255.255.0	0.0.0.0	VMware Virtual Ethernet Adapter for \
00:50:56:c0:00:08	192.168.50.10	255.255.255.0	0.0.0.0	VMware Virtual Ethernet Adapter for \

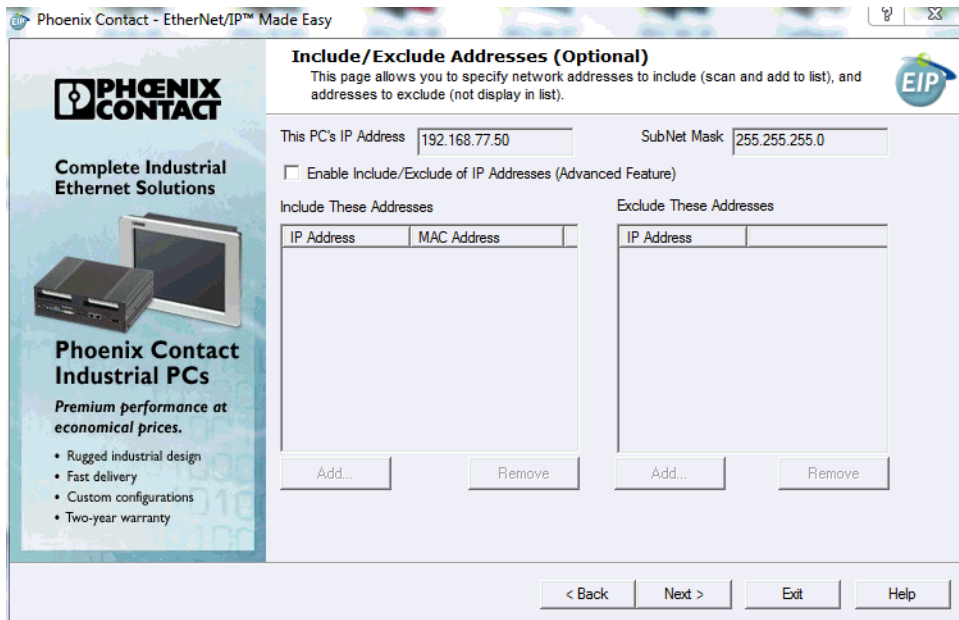
Refresh Network Adapter List

Submit Feedback We appreciate your feedback on this product's performance and any desired additional functionality.

Version: 1.0.1

< Back Next > Exit Help

4. Select the Ethernet adaptor that will be used to connect to the PWS system and click Next.



Phoenix Contact
Complete Industrial Ethernet Solutions

Phoenix Contact Industrial PCs
Premium performance at economical prices.

- Rugged industrial design
- Fast delivery
- Custom configurations
- Two-year warranty

Include/Exclude Addresses (Optional)
This page allows you to specify network addresses to include (scan and add to list), and addresses to exclude (not display in list).

This PC's IP Address: 192.168.77.50 SubNet Mask: 255.255.255.0

☐ Enable Include/Exclude of IP Addresses (Advanced Feature)

Include These Addresses

IP Address	MAC Address
------------	-------------

Add... Remove

Exclude These Addresses


IP Address

Add... Remove


< Back Next > Exit Help

5. Click Next.

Phoenix Contact - EtherNet/IP™ Made Easy




Complete Industrial Ethernet Solutions



Lean Managed Switches

- SNMP and Web based management
- RSTP and Fast Ring redundancy
- "E" version with default "ON" IGMP Snooping/Query for



Set IP Addresses
Use this page to specify IP address(es) for device(s). Then click 'Next' to assign them.

This PC's IP Address: SubNet Mask:

Please select the devices to give IP Addresses to, and then specify the IP Addresses below.

MAC Address	IP Address	IP to Assign	Device Description
00:A0:45:35:A2:FF			BootP: 67 requests, last: 08:24:31

☒ Show Only Phoenix Contact Devices ☒ Filter Unknown Device types


IP Address:

Once you have entered a valid IP range, then click Add.


After you have associated all the devices with IPs that you want, click Next.

6. Select the correct device and enter the correct IP address (192.168.77.11), click Add, and then click Next.

Phoenix Contact - EtherNet/IP™ Made Easy



Complete Industrial Ethernet Solutions



MMS, MCS and SMCS

Smart-mode for automatic EtherNet/IP selection

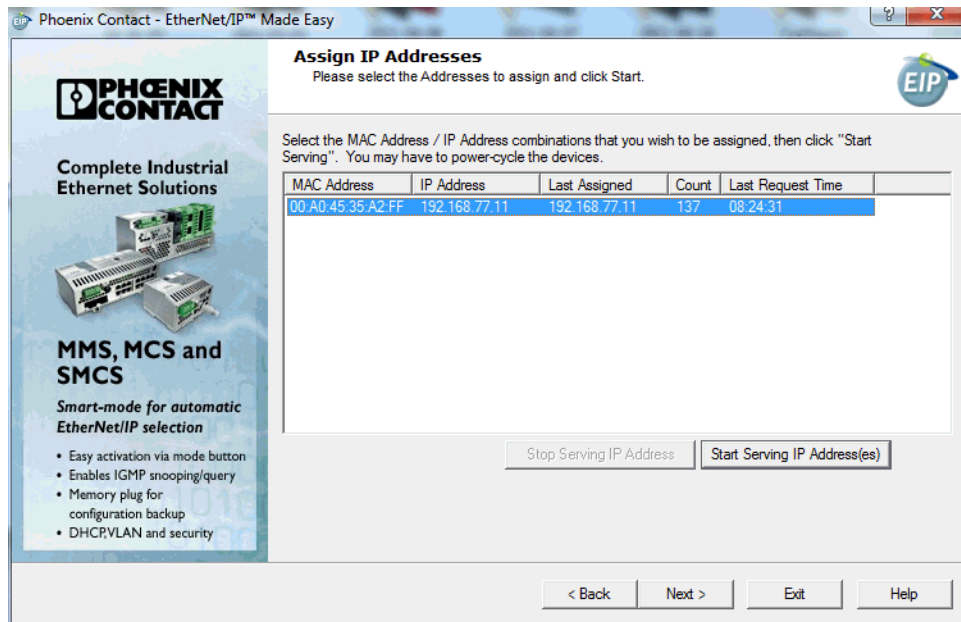
- Easy activation via mode button
- Enables IGMP snooping/query
- Memory plug for configuration backup
- DHCPVLAN and security

Assign IP Addresses
Please select the Addresses to assign and click Start.

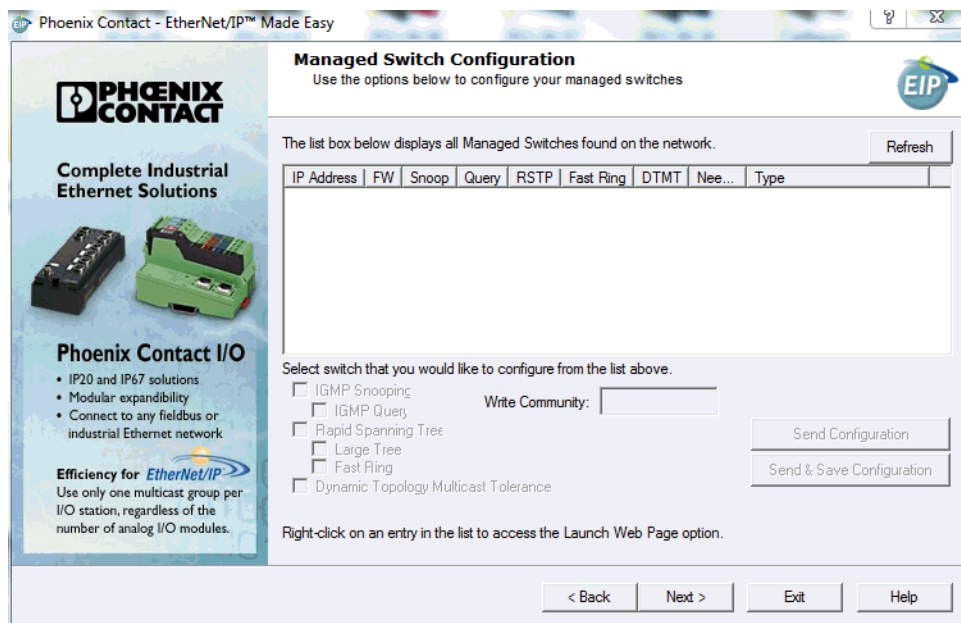
Select the MAC Address / IP Address combinations that you wish to be assigned, then click "Start Serving". You may have to power-cycle the devices.

MAC Address	IP Address	Last Assigned	Count	Last Request Time
00:A0:45:35:A2:FF	192.168.77.11	118	08:24:31	

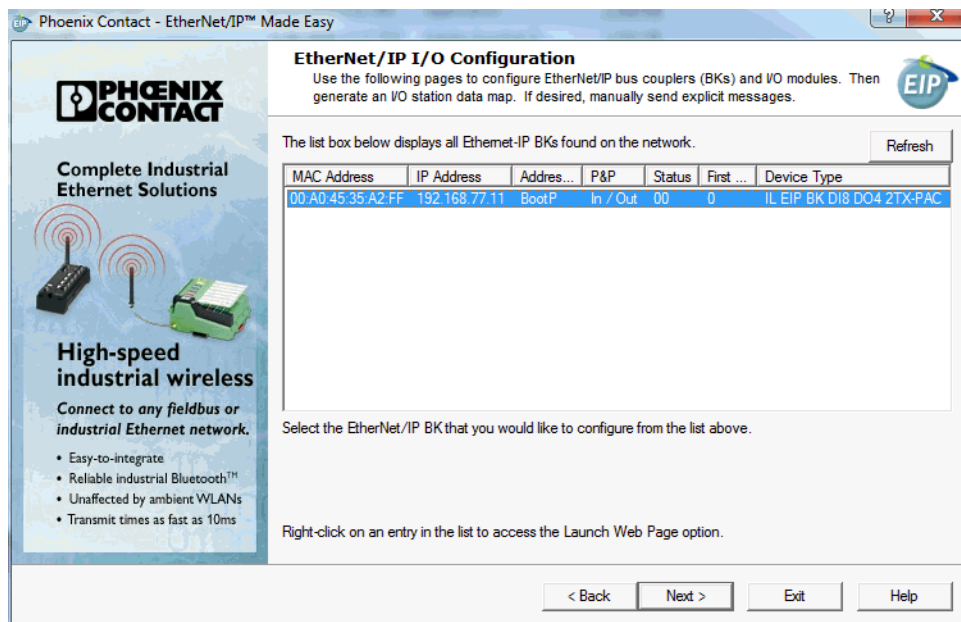
7. Select the correct device and click "Start Serving IP Address(es)".



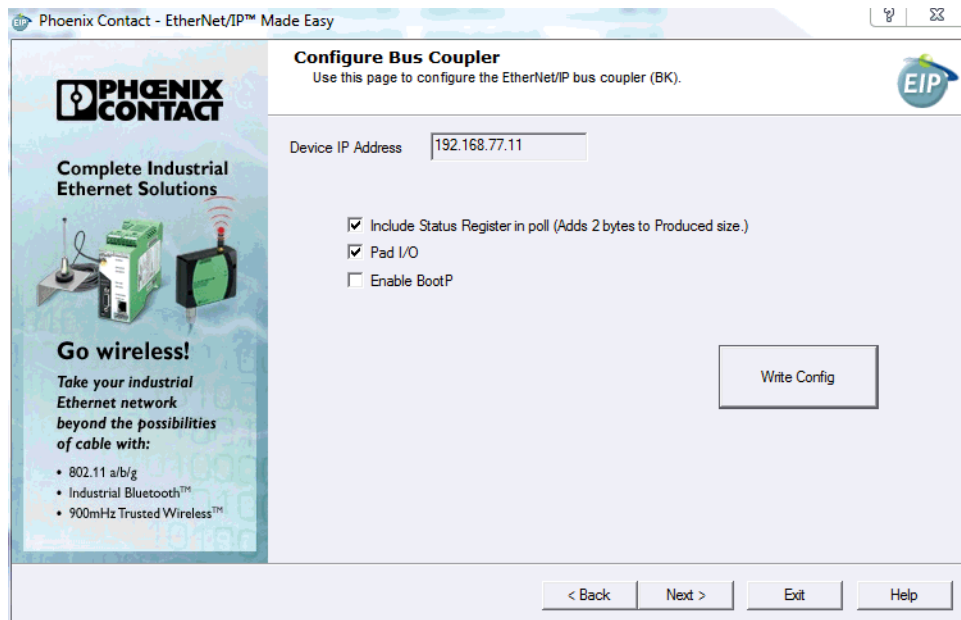
8. When the correct IP address is displayed in the IP Address column, click Next.



9. Click Next.



10. Select the correct device from the list and click Next.



11. Uncheck "Enable BootP", click "Write Config", and then click Next.

Phoenix Contact - EtherNet/IP™ Made Easy

Complete Industrial Ethernet Solutions

nanoLine™
The smart, easy-to-use, entry level controller.

- Removable operator panel
- Fast and easy to program
- Serial/Ethernet connectivity

Add I/O

Use this page to add all of the I/O modules physically attached to the bus coupler to it's configuration.

Device IP Address: 192.168.77.11

Type: "IL EIP BK D18 DO4 2TX-PAC"
 Inline Status: "00"
 First Faulted Module: "0"
 Plug and Play Mode: "In / Out"
 Module Count: "4"

If the Values that show up after clicking "Add All I/O" don't match your expected counts, Try enabling Plug and Play mode.)

Produced	12	Consumed	2
Digital Input Instances	8	Digital Output Instances	4
Analog Input Instances	4	Analog Output Instances	0

12. Click Next.

Phoenix Contact - EtherNet/IP™ Made Easy

Complete Industrial Ethernet Solutions

The physical layer
Every aspect of an industrial Ethernet solution:

- Cat 5, 6 and M12 cables
- Field wireable connectors
- Panel feed-throughs
- Datatrak surge protection

Configure I/O

Use this page to verify your I/O and configure analog inputs.

Device IP Address: 192.168.77.11

Module List

Module	Module Type	Channel
DO 4 Bits 41bd: 189 (Onboard)		
DI 8 Bits 81be: 190 (Onboard)		
AIO 4 Words 27f: 127		
AIO 4 Words 27f: 127		

Configuration Option: Configuration Choice:

Manual configuration

<input type="checkbox"/> Bit15	<input type="checkbox"/> Bit7
<input type="checkbox"/> Bit14	<input type="checkbox"/> Bit6
<input type="checkbox"/> Bit13	<input type="checkbox"/> Bit5
<input type="checkbox"/> Bit12	<input type="checkbox"/> Bit4
<input type="checkbox"/> Bit11	<input type="checkbox"/> Bit3
<input type="checkbox"/> Bit10	<input type="checkbox"/> Bit2
<input type="checkbox"/> Bit9	<input type="checkbox"/> Bit1
<input type="checkbox"/> Bit8	<input type="checkbox"/> Bit0

☐ Place All Analog Configuration Words into I/O

13. Click Exit.

Phoenix EtherNet/IP Bus Coupler - Firmware Upgrade



1. Determine the current firmware version:

- a) In an Internet browser address bar, enter the IP Address of the controller (example: <http://192.168.30.10>).

The following window is displayed.



- b) Click on "Device Information" on the left side of the window.
The current firmware version is displayed (Version 1.10 in this example).

IL EIP BK DI8 DO4

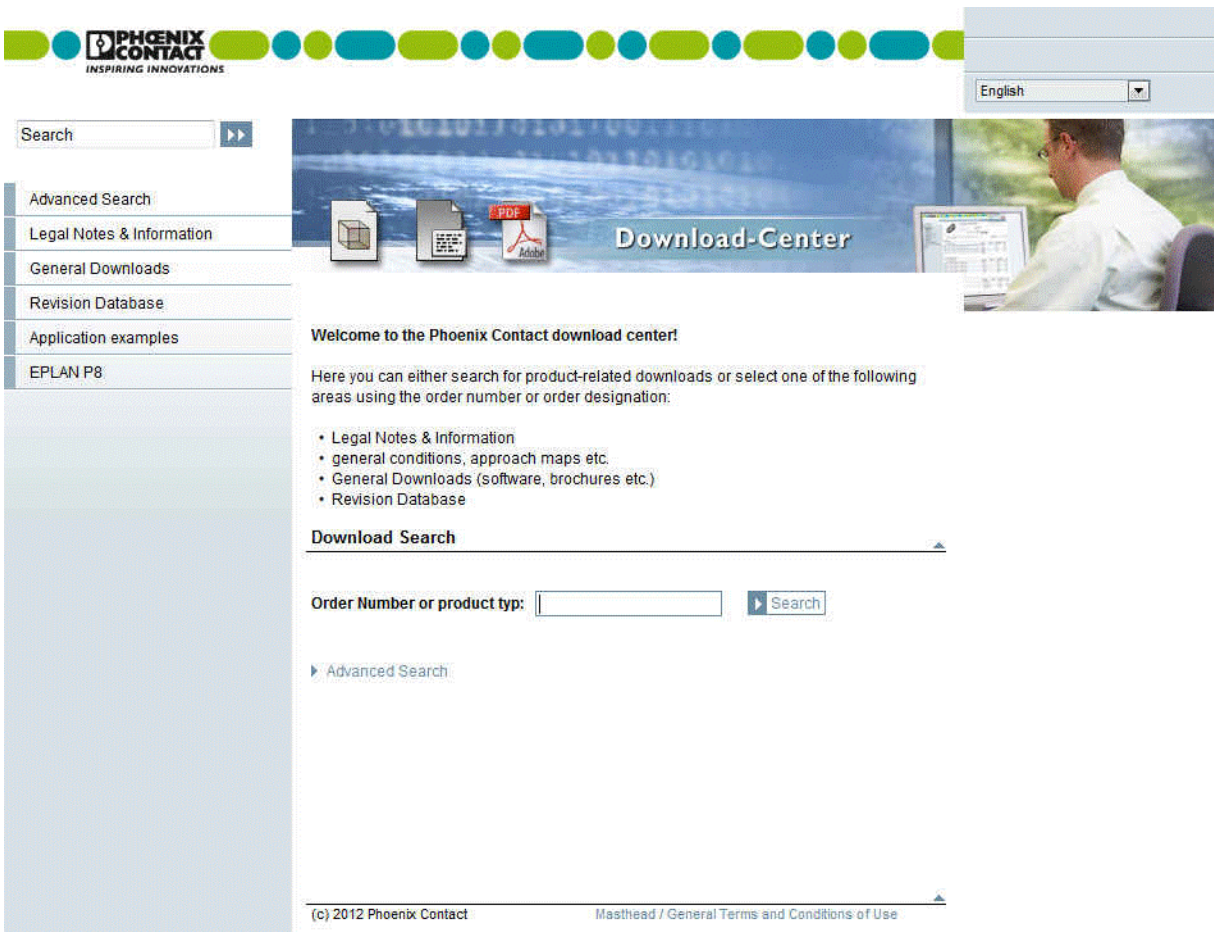
- General Instructions
- Device Information
 - General
 - Technical Data
 - Hardware Installation
 - Local Diagnostics
- Device Configuration
- Inline Station
- Home

IL EIP BK DI8 DO4 2TX-PAC
last update: 7:42:31

Device Information	
Vendor	Phoenix Contact GmbH & Co. KG
Address	PO Box 1341, D-32819 Blomberg
Phone	+49 -(0)5235 -3-00
Internet	www.phoenixcontact.com
Type	IL EIP BK DI8 DO4
Order No.	2897758
Serial Number	001112037964
Bootloader Version	1
Firmware Version	1.10 ←
Hardware Version	1
MAC Address	00:a0:45:04:3f:33
Vendor ID	562
Product Type	0=Generic
Product Code	8167
Input Assembly Instance	101 dec/65 hex
Output Assembly Instance	100 dec/64 hex
Listen-Only Heartbeat Connection	255 dec/FF hex
Input-Only Heartbeat Connection	254 dec/FE hex
user defined:	
Name of Device	IL EIP BK DI8 DO4 2TX-PAC

2. Find the latest firmware for the controller:

- a) In a browser that is connected to the Internet, enter the following URL to go to the Phoenix Contact Download Center:
 - <http://select.phoenixcontact.com/phoenix/dwl/dwlfr1.jsp?lang=en>



b) Enter the controller's Order Number (2897758) in the search box in the middle of the download window and click Search.

A window should be displayed showing available documentation and the latest firmware file (under the Software section).

PHENIX CONTACT
INSPIRING INNOVATIONS

English

Search

Advanced Search
Legal Notes & Information
General Downloads
Revision Database
Application examples
EPLAN P8

Order no. 8283: AH EN TFTP FIRMWARE UPDATE
Application Note TFTP FIRMWARE UPDATE
English 01 302841 pdf
▶ [ah_en_tftp_firmware_update_8283_en_01.pdf](#)

Order no. 8283: AH DE TFTP FIRMWARE UPDATE
Firmware Update bei Ethernet/IP-Buskopplern der Produktlinien Inline und Fieldline
German 01 316859 pdf
▶ [ah_de_tftp_firmware_update_8283_de_01.pdf](#)

Order no. 6288: AH DE IB IL DEVICE LIST
Liste der Teilnehmer der Produktfamilie Inline
German 07 2065359 pdf
▶ [ah_de_ib_il_device_list_6288_de_07.pdf](#)

Order no. 8299: AH DE IL TEMPERATURE
Temperaturangaben bei Inline-Klemmen
German 00 89893 pdf
▶ [ah_de_il_temperature_8299_de_00.pdf](#)

Order no. 6921: AH IL BK IO LIST
E/A-Module an Buskopplern (Stand 04/2009) - I/O Modules at Bus Couplers (Status 04/2009)
German English 12 153174 pdf
▶ [ah_il_bk_io_list_6921_ia_12.pdf](#)

Software

Description	Language	Revision	File size [bytes]	Type
EDS file for project planning ▶ IL_EIP_BK_DI8_DO4_eds.zip	Internatio	1.1	5992	zip
Firmware 1.10 for IL EIP BK DI8 DO4 2TX-PAC ▶ IL_EIP_BK_DI8_DO4_2TX-PAC_Firmware_1_10.zip	Internatio	1.10	566025	zip

Configuration File

Description	Language	Revision	File size [bytes]	Type
BootP IP addressing tool ▶ IPAssign.exe	English	1.1	689512	exe

c) Click on the light blue .zip file link (shown next) to download the file.

▶ [IL_EIP_BK_DI8_DO4_eds.zip](#)

Firmware 1.10 for IL EIP BK DI8 DO4 2TX-PAC ▶ IL_EIP_BK_DI8_DO4_2TX-PAC_Firmware_1_10.zip	Internatio	1.10	566025	zip
--	------------	------	--------	-----

Configuration File

Note: In our example, we already have the latest firmware version (1.10) so no action would be necessary. But for illustration purposes we will continue as if we needed to download the file.

- d) when asked to Accept the Terms and Conditions, click Accept.
- e) Download the .zip file to a location you can find later. When the download is finished, close the Download and Search Results windows.

- f) Locate the .zip file and uncompress and extract the **c2897758.fw** file to a location you can find later.

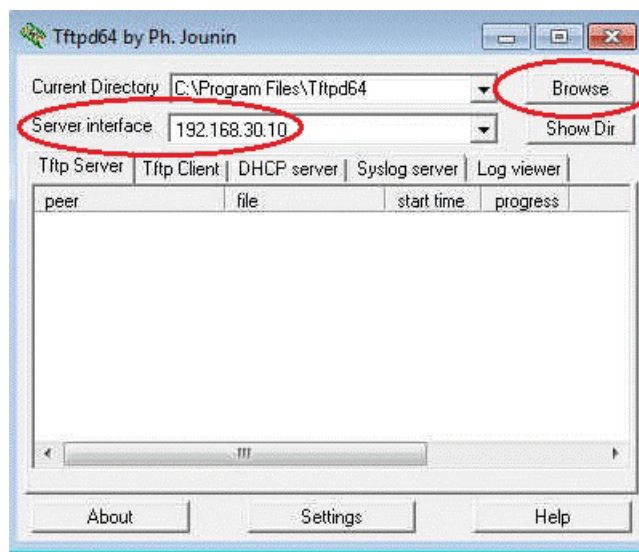
3. Update the firmware:

Requirement

A TFTP Server must be available on the PC where the Phoenix controller is connected and in the same IP Address domain.


In our example, we used the jounin.net TFTP Server because it was both 32 and 64 bit compatible with Windows 7. The URL for this application is <http://tftpd32.jounin.net/>. Download and install either the 32 or 64 bit Standard Edition Installer package.

- a) From the Start menu, double click on the TFTP Sever icon.
The following window is displayed.



- b) Using the Browse button, locate the firmware file (c2897758.fw).
c) In the Server interface field, set the IP Address of the PC.
d) Go back to the Phoenix IL EIP BK web interface screen, click on "Device Configuration" at the left and then click on "Software Update" that appears underneath.

The following window should be displayed.



IL EIP BK DI8 DO4

last update: 9:44:21

Software Update

TFTP Server IP Address	TFTP:// 192.168.30.10
Downloadable File Name	c2897758.fw
Software Update on Next Reboot	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
TFTP Update Status	Firmware Update was successfully executed at last restart.

If the software update status is set to enable the IL EIP BK DI8 DO4 will try to load new software within the next reboot. Press the apply button to change the software update status. The settings will take effect after the next reboot of the IL EIP BK DI8 DO4.

Enter Password:

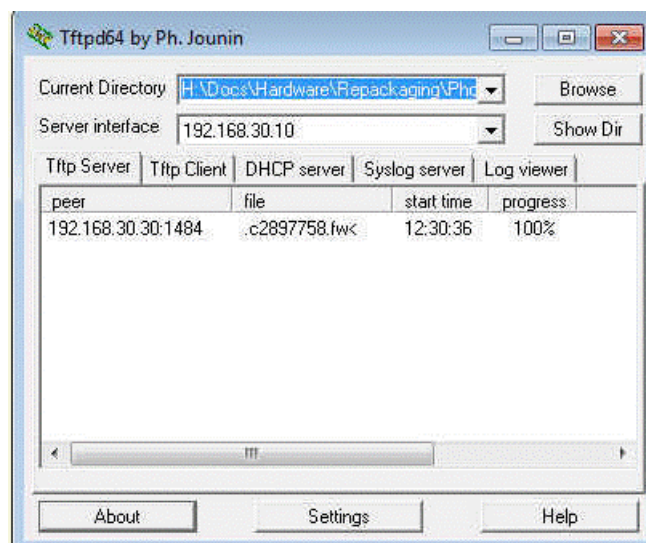
Software Update via FTP on Next Reboot: ☐ Enable ☒ Disable

If the software update status is set to enable, the IL EIP BK DI8 DO4 will try to load new software after reboot. Press the apply and reboot button to change the software update status and start reboot of the IL EIP BK DI8 DO4.

Enter Password:

- e) Enter the IP Address of the PC where the TFTP Server is running.
- f) Enter the firmware file name (c2897758.fw in our example).
- g) Select the Enable radio button.
- h) Enter the password ("private") and click Apply and Reboot.

Once the controller reboots and transfer is complete, the TFTP window should look similar to the following example. (To verify the upgrade, connect to the controller as explained at the beginning of this procedure.)



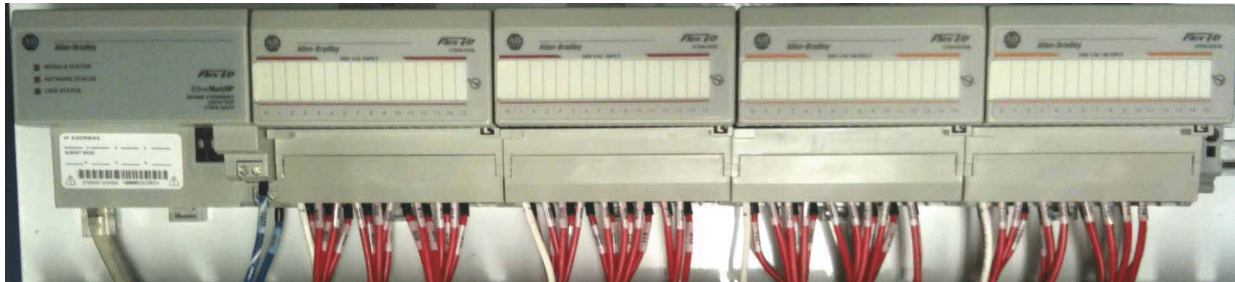
Pulse Rate and Duty Cycle - Phoenix EtherNet/IP Bus Coupler

Model Number	Phoenix Contact IL EIP BK DI8 DO4 2TX-PAC	
Input Voltages	24vDC	110vAC, 220vAC, 50/60 HZ
Pulse Rate	25 counts per second	15 counts per second
Duty Cycle	50/50	50/50

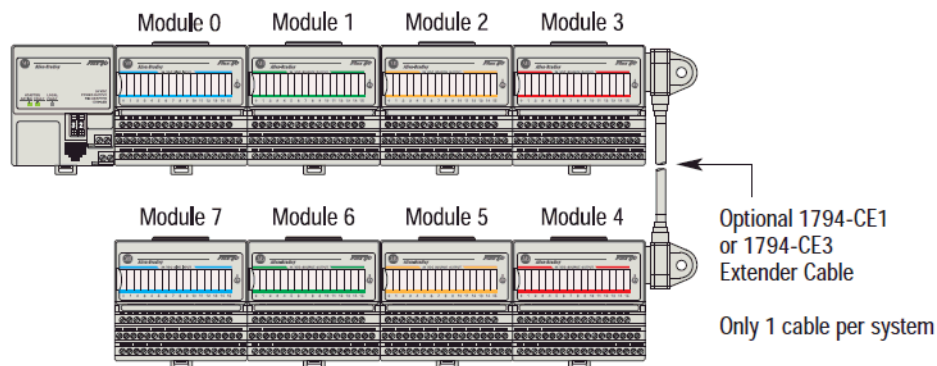
Allen-Bradley 1794-AENT

The Allen-Bradley 1794-AENT FLEX I/O EtherNet/IP Communication Adapter replaces the 1794-ADN DeviceNet Adapter when DeviceNet Integra systems are converted to COMMANDbatch.

Allen-Bradley 1794-AENT Communication Adapter (left) with 4 IO Modules

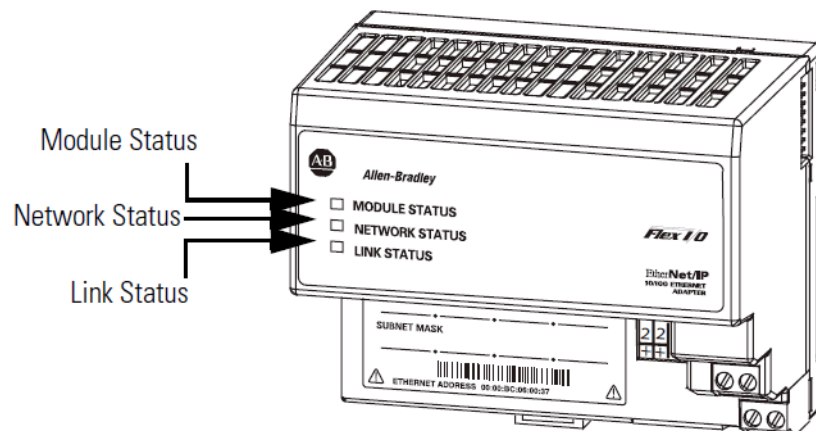


Each adapter supports up to 8 IO modules, which can be mounted in any order. If there is not enough room to mount 8 modules in a row, you can use the optional extender cable shown below.



When using the optional extender cable, module groups are numbered sequentially along the length of the system.

Indicator LEDs on the 1794-AENT Adapter




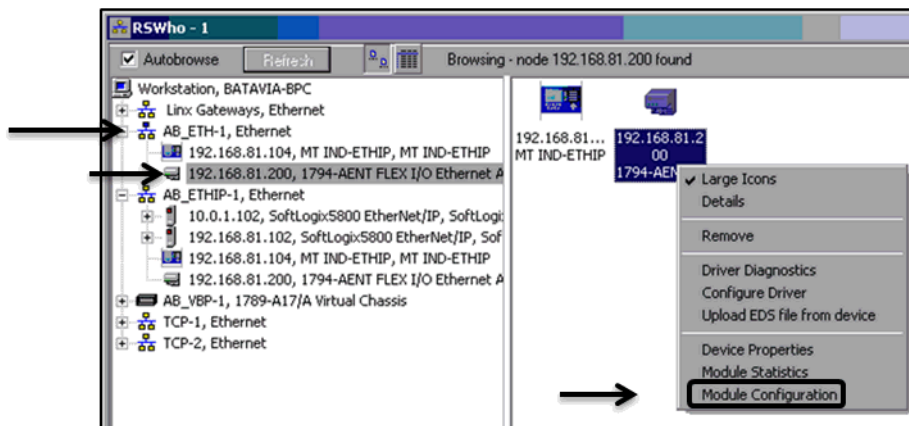
Allen-Bradley 1794-AENT - Indicator LEDs for Troubleshooting

Indicator	Status	Description
Module Status Indicator	Off - No Power	Adapter does not have 24V dc power. Make sure power is being supplied to the adapter.
	Flashing Green - Standby	Adapter not configured. Configure adapter.
	Green - Operational	Adapter operating correctly. No action required.
	Flashing Red - Minor Fault	A recoverable fault has been detected. This could be caused by an incorrect or inconsistent configuration. Check configuration and reconfigure as needed.
	Red - Major Fault	An unrecoverable fault has been detected. Recycle power to the adapter. If this does not clear the fault, replace the adapter.
	Flashing Red and Green - Self Test	Adapter performing power-up self test. Wait until completed.
Network Status Indicator	Off - Not Powered, No IP Address	Adapter is not powered, or does not have an IP address. <ul style="list-style-type: none"> • Verify there is power and the adapter is correctly wired to the power supply. • Make sure the adapter is configured.
	Flashing Green - No Connections.	Adapter has obtained an IP address, but has no established connections.
	Green - CIP Connections	Adapter has an IP address and at least one established connection.
	Flashing Red - Connection Timeout	One or more of the connections in which the adapter is the target has timed out.
	Red - Duplicate IP Address	Adapter has detected that its IP address is already in use. Configure the adapter with a unique IP address.
	Flashing Red and Green - Self Test	Adapter performing power-up self test. I
Link Status Indicator	Off - No link exists.	Verify network cabling. Correct as necessary.
	Flashing Green - I/O is being transmitted or received.	Normal operation. No action required.
	Steady Green - A link exists.	

Allen-Bradley 1794-AENT - Changing the IP Address

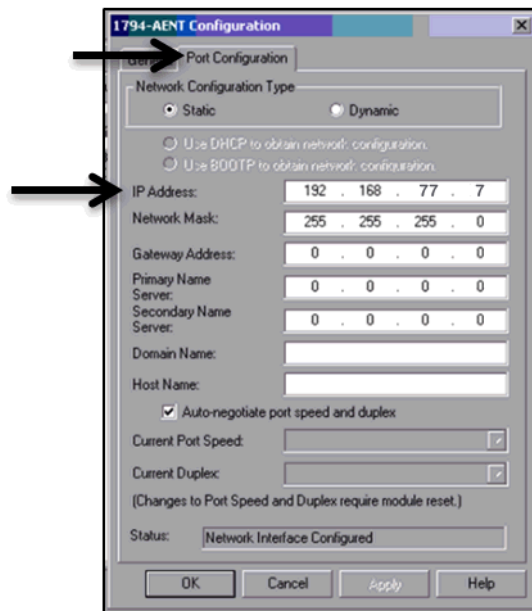
Note: The following procedure only pertains to existing/configured 1794-AENTs. If you are configuring a new 1794-AENT, see [Allen-Bradley 1738 and 1794 - Initial IP Setup](#).

1. Select **Start > Programs > Rockwell Software > RSLinkClassic**.
2. From the RSLink window, select **Communications > RSWho** .
3. On the left side of the RSWho window, expand the list under **AB_ETH-1, ETHERNET** then select the **1794-AENT** device.



4. On the right side of the RSWho window, right click on the **1794-AENT** icon and select "Module Configuration".
5. Select the **Port Configuration** tab, change the IP Address to **192.168.77.xx** (where 192.168.77 identifies the CBControlNet network and xx identifies the controller), and click OK.

Note: IP Addresses should range from 192.168.77.10 - 192.168.77.19 for Fieldbus Controllers, Phoenix EIP or Flex I/O EIP.



Pulse Rate and Duty Cycle Specifications

Model Number	Allen-Bradley 1794-AENT	
Input Voltages	24vDC	110vAC, 220vAC, 50/60 HZ
Pulse Rate	40 counts per second	15 counts per second
Duty Cycle	50/50	50/50

Allen-Bradley 1738-AENT

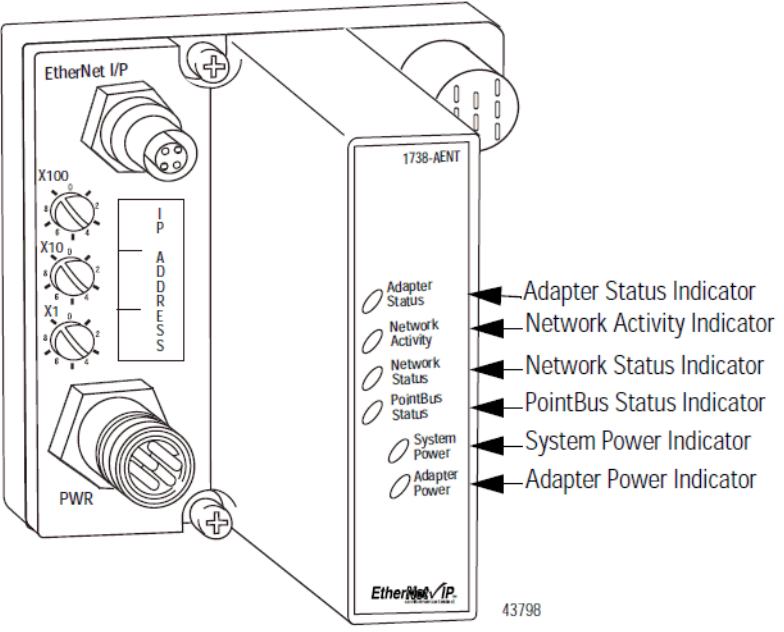
The Allen-Bradley 1738 EtherNet/IP Communication Adapter replaces the DeviceNet Adapter when DeviceNet Integra systems are converted to COMMANDbatch.

The Allen-Bradley 1738 may also be utilized with COMMANDbatch-OS to support Serial Valve technology.

Allen-Bradley 1738-AENT Communication Adapter (left) with 2 IO Modules



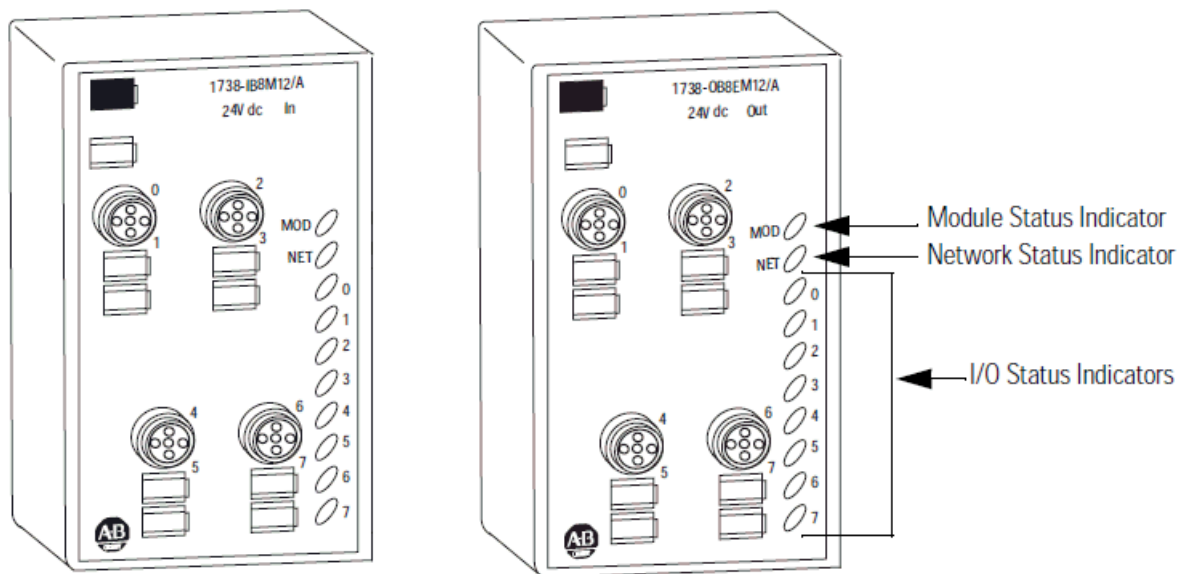
Indicator LEDs on the 1738-AENT Adapter



Allen-Bradley 1738-AENT - Indicator LEDs for Troubleshooting

LED	Indication	Probable Cause
Adapter Status	Off	No power applied to the device.
	Flashing Red/Green	LED power up test (module self test).
	Green	Device is operating normally.
	Flashing Red	Recoverable fault has occurred: - Firmware (NVS) update - Network IP address changed - CPU load exceeded.
	Solid Red	Unrecoverable fault has occurred: - self test failure (checksum failure at power up, ramtest) failure at powerup - firmware fatal error.
Network Activity	Off	No link established.
	Flashing Green/Off	Transmit or receive activity.
	Green	Link established.
Network Status	Off	Device is not initialized. The module does not have an IP address.
	Flashing Green	No CIP connections. Device has an IP address, but no CIP connections are established.
	Green	CIP connections. Device on line, has an IP address, and CIP connections are established.
	Flashing Red	One or more Ethernet connections has timed out.
	Red	No link. The module is not physically connected to a powered Ethernet device.
	Flashing Red/Green	The module is performing a self test (only occurs during power up test).
PointBus Status	Off	Device not powered - check module status indicator.
	Flashing Red/Green	Recoverable fault has occurred: - at power up, the number of expected modules does not equal the number of modules present - a module is missing - node fault (I/O connection timeout).
	Red	Unrecoverable fault has occurred: - the adapter is bus off - controller in program/idle mode - Ethernet cable open.
	Green	Adapter online with connections established (normal operation, run mode).
System Power	Off	Not active - field power is off or dc-dc converter problem.
	Green	System power on - dc-dc converter active (5V).
Adapter Power	Off	Not active - field power is off.
	Green	Power on - 24V present.

Indicator LEDs: A-B 1738-IB8M12 (Input) and 1738-OB8EM12 (Output) Modules

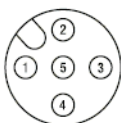


Descriptions of LEDs: 1738-AENT Input and Output Modules

Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to missing, incomplete, or incorrect configuration
Flashing Red	Recoverable fault
Red	Unrecoverable fault - may require device replacement
Flashing Red/Green	Device is in self-test
Network Status	
Off	Device is not on line: - Device has not completed dup_MAC_ID test. - Device not powered - check module status indicator.
Flashing Green	Device is on line but has no connections in the established state.
Green	Device is on line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state.
Red	Critical link failure - failed communication device. Device detected error that prevents it from communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request - long protocol message.
I/O Status	
Off	Input is in the off state
Yellow	Input on

Parker Hannifin PSSN8M12A Input Module (and Connector Wiring)

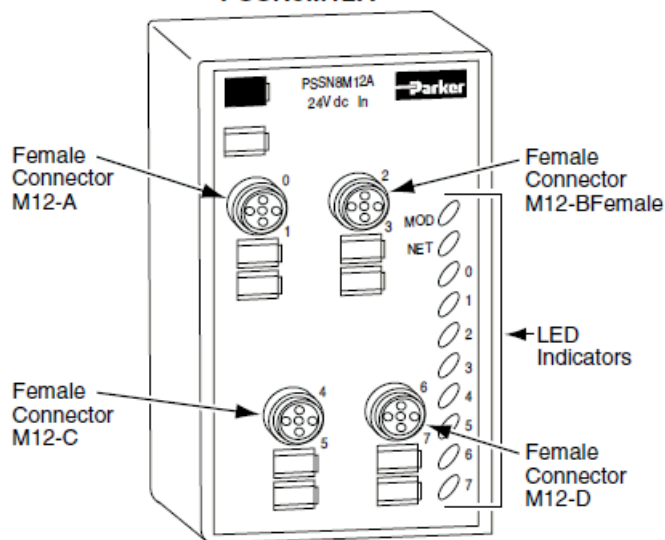
PSSN8M12A Connector Wiring



(view into connector)

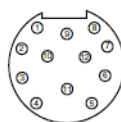
Pin 1 - 24VDC	Pin 4 - Input 0 (M12-A)
Pin 2 - Input 1 (M12-A)	Pin 5 - No Connect
Pin 3 - Input 3 (M12-B)	
Pin 4 - Input 5 (M12-C)	
Pin 5 - Input 7 (M12-D)	
Pin 6 - Common	

PSSN8M12A



Parker Hannifin PSSN8M23A Input Module (and Connector Wiring)

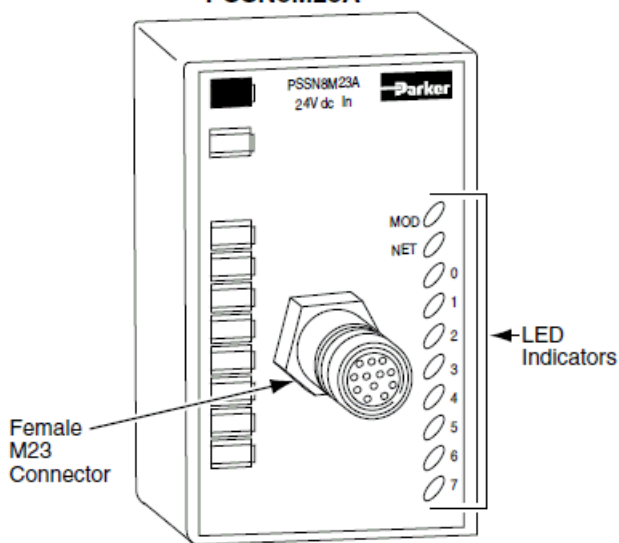
PSSN8M23A Connector Wiring



(view into connector)

Pin 1 - Input 0	Pin 7 - Input 6
Pin 2 - Input 1	Pin 8 - Input 7
Pin 3 - Input 2	Pin 9 - Return (Com)
Pin 4 - Input 3	Pin 10 - Return (Com)
Pin 5 - Input 4	Pin 11 - 24VDC
Pin 6 - Input 5	Pin 12 - Chassis

PSSN8M23A

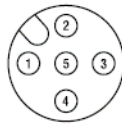


Description of LEDs: Parker Hannifin PSSN8M12A and PSSN8M23A Input Modules

Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to missing, incomplete, or incorrect configuration
Flashing Red	Recoverable fault
Red	Unrecoverable fault - may require device replacement
Flashing Red/Green	Device is in self-test
Network Status	
Off	Device is not on line: - Device has not completed dup_MAC-id test. - Device not powered - check module status indicator.
Flashing Green	Device is on line but has no connections in the established state.
Green	Device is on line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state.
Red	Critical link failure - failed communication device. Device detected error that prevents it from communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request - long protocol message.
I/O Status	
Off	Input is in the off state
Yellow	Input on

Parker Hannifin PSST8M12A Output Module (and Connector Wiring)

PSST8M12A Connector Wiring



(view into connector)

Pin 1 - 24VDC

Pin 2 - Output 1 (M12-A)

Output 3 (M12-B)

Output 5 (M12-C)

Output 7 (M12-D)

Pin 3 - Common

Pin 4 - Output 0 (M12-A)

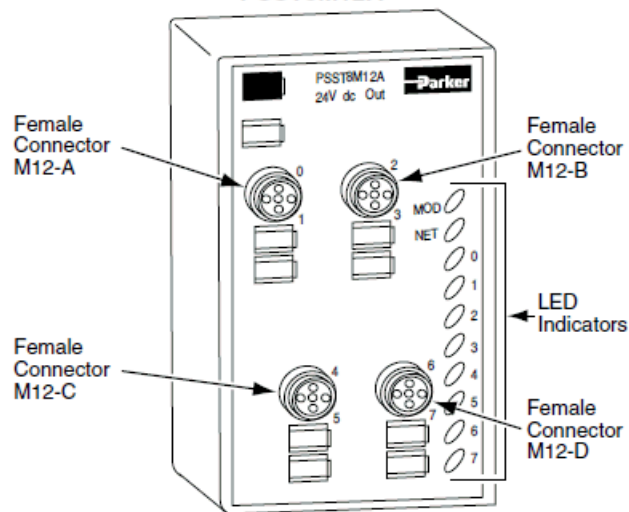
Output 2 (M12-B)

Output 4 (M12-C)

Output 6 (M12-D)

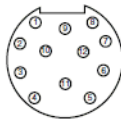
Pin 5 - No Connect

PSST8M12A



Parker Hannifin PSST8M23A Output Module (and Connector Wiring)

PSST8M23A Connector Wiring



(view into connector)

Pin 1 - Output 0

Pin 2 - Output 1

Pin 3 - Output 2

Pin 4 - Output 3

Pin 5 - Output 4

Pin 6 - Output 5

Pin 7 - Output 6

Pin 8 - Output 7

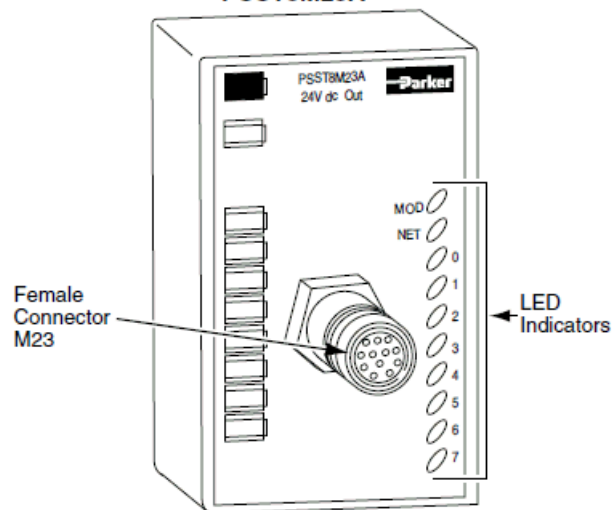
Pin 9 - Return (Com)

Pin 10 - Return (Com)

Pin 11 - 24VDC

Pin 12 - Chassis

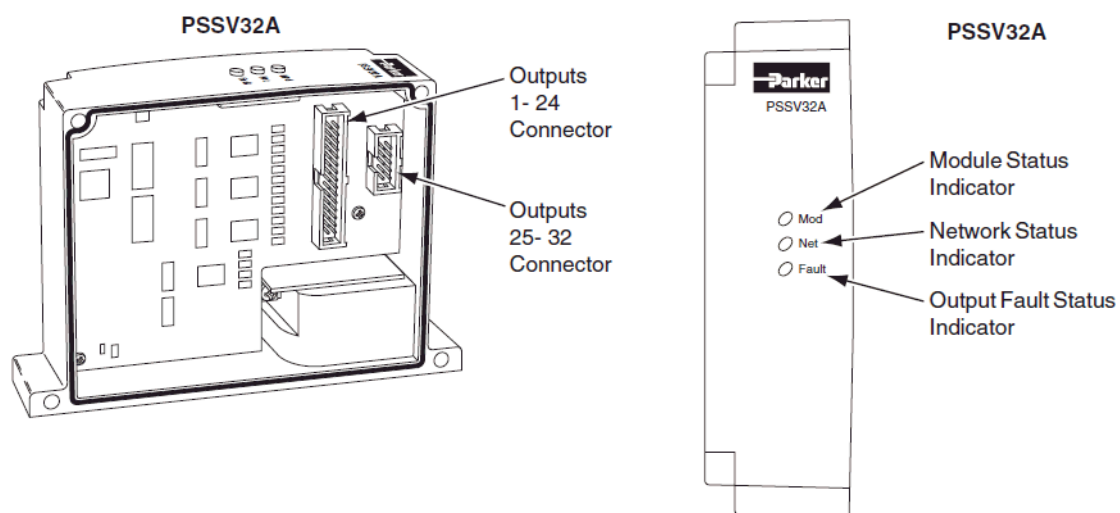
PSST8M23A



Description of LEDs: Parker Hannifin PSST8M12A and PSST8M23A Output Modules

Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to missing, incomplete, or incorrect configuration
Flashing Red	Recoverable fault
Red	Unrecoverable fault - may require device replacement
Flashing Red/Green	Device is in self-test
Network Status	
Off	Device is not on line: - Device has not completed dup_MAC-id test. - Device not powered - check module status indicator.
Flashing Green	Device is on line but has no connections in the established state.
Green	Device is on line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state.
Red	Critical link failure - failed communication device. Device detected error that prevents it from communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request - long protocol message.
I/O Status	
Off	Output is inactive
Yellow	Output is active and under control
Flashing Red	Open circuit detection. No load. (Off-State only)
Red	Short circuit detected. (On-State only)

Parker Hannifin PSSTV32A Valve Driver Module



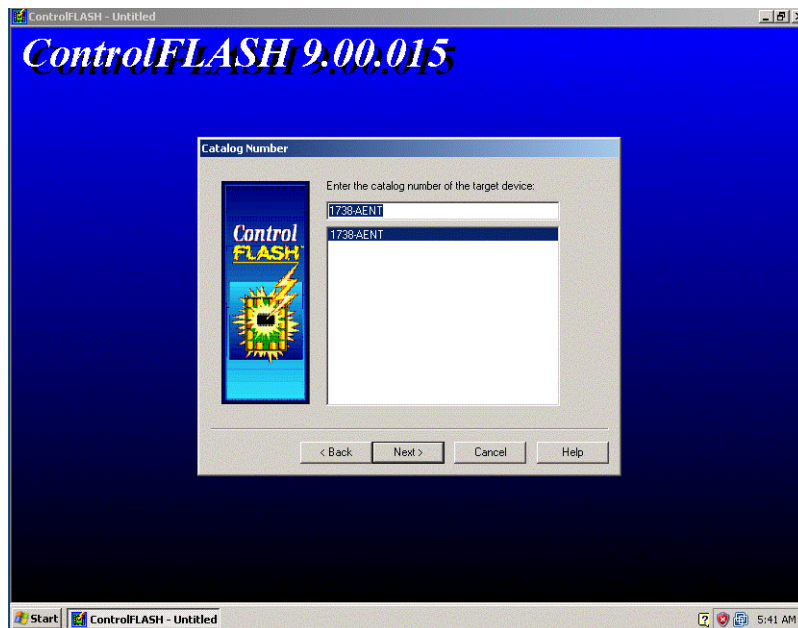
Note: Indicator LEDs for the Parker Hannafin PSSV32A are provided on the next page.

Indicator LEDs: Parker Hannifin PSSV32A Valve Driver Module

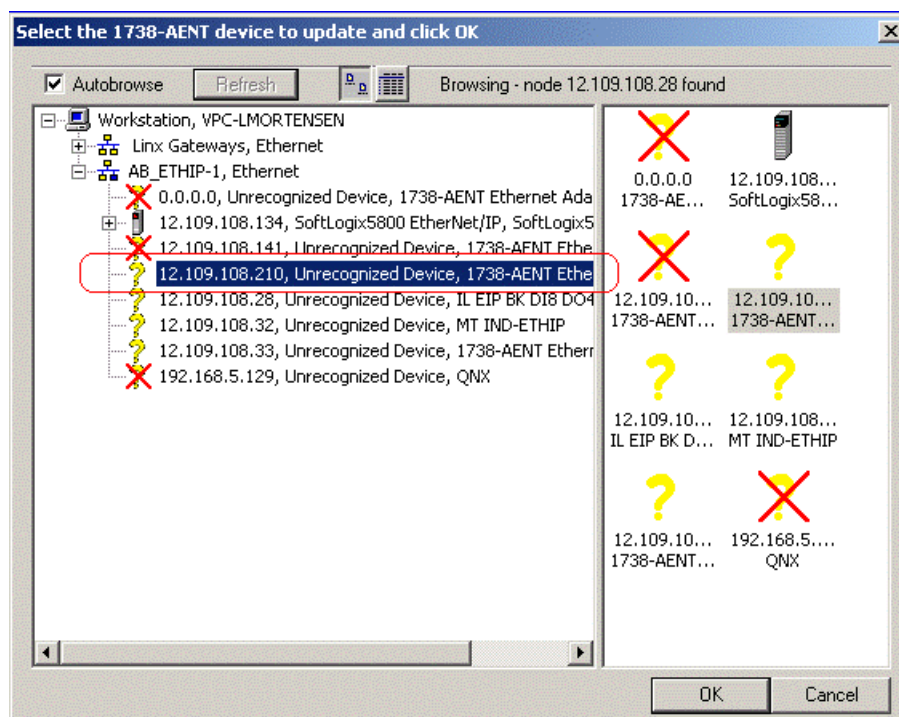
Indication	Probable Cause
Module Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to missing, incomplete, or incorrect configuration
Flashing Red	Recoverable fault
Red	Unrecoverable fault - may require device replacement
Flashing Red/Green	Device is in self-test
Network Status	
Off	Device is not on line: - Device has not completed dup_MAC-id test. - Device not powered - check module status indicator.
Flashing Green	Device is on line but has no connections in the established state.
Green	Device is on line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state.
Red	Critical link failure - failed communication device. Device detected error that prevents it from communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identity Communication Faulted Request - long protocol message.
Output Fault Status	
Off	Outputs operating normally
Red	Over current, short circuit or over temperature detected on one or more outputs. (On-State only)

Allen-Bradley 1738-AENT - Firmware Upgrade

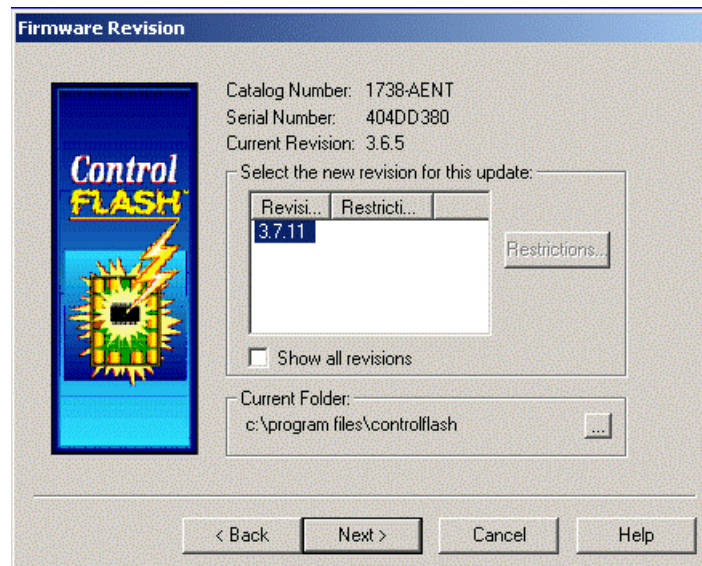
1. Open ControlFLASH, select the 1738-AENT and click Next as shown below.



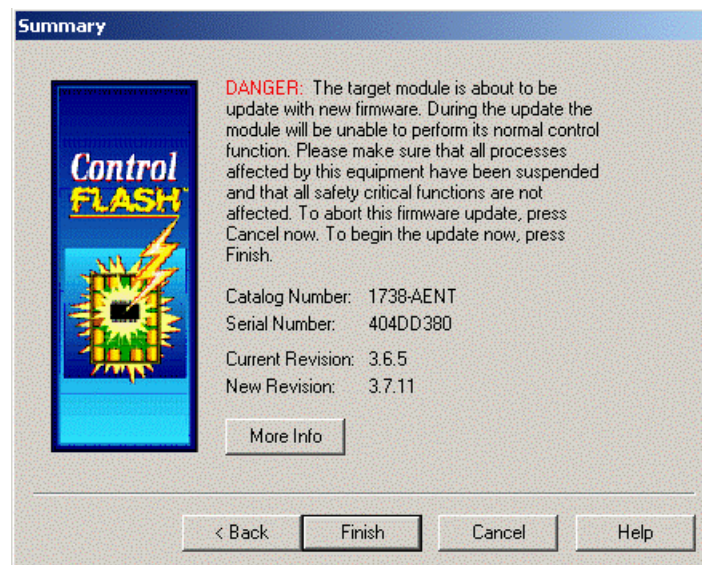
2. Expand the list for the ETHIP-1 driver, select the 1738-AENT (identified by its IP Address), and click OK as shown below.



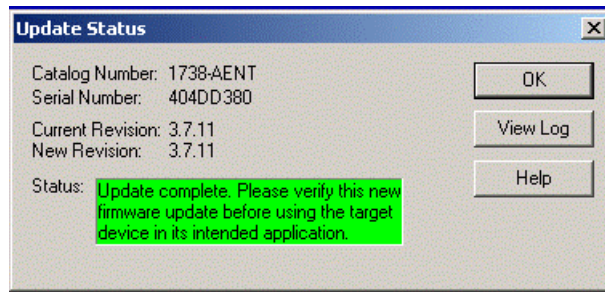
3. Select 3.7.11 from the revision list and click Next as shown below.



4. When the following window appears, click Finish.



5. When prompted to begin the update, click Yes.
DO NOT POWER OFF THE UNIT DURING THE FLASH PROCESS!
6. When the Update Status shows "Update complete.", click OK.



Allen-Bradley 1738 and 1794 - Initial IP Setup

This section pertains to the initial setup of new 1738 and 1794-AENTs only. For existing 1738 and 1794-AENTs, see [Allen-Bradley 1738 and 1794 - Driver Configuration](#).



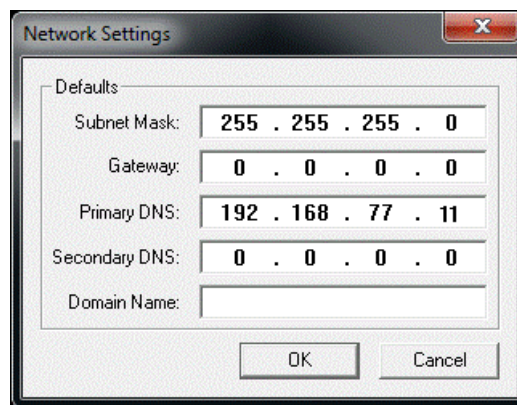
Assumption:

The following procedure assumes that the adapter and IO modules are mounted and that the network and power cables are connected.

To initially set the IP Address on 1738 or 1794-AENTs:

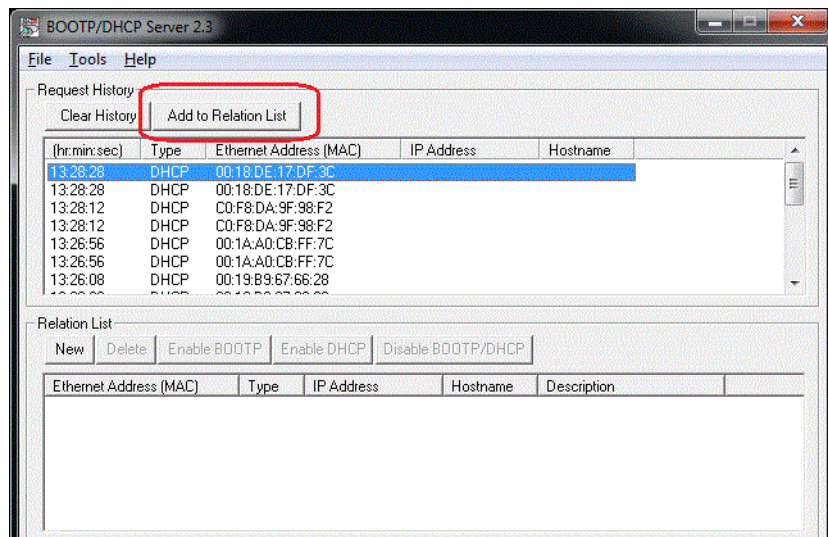
1. **Write down the MAC Address (located on the side of the adapter).**
2. **Open the BOOTP/DHCP Server.**

A window similar to the following is displayed.



3. **Leave Subnet Mask set to 255.255.255.0 and click OK.**

The BOOTP/DHCP window is displayed.



4. Select the 1794-AENT Controller from the list and click the "Add to Relation List" button.

The following window is displayed.

New Entry

Ethernet Address (MAC): 00:18:DE:17:DF:3C

IP Address: 0 . 0 . 0 . 0

Hostname:

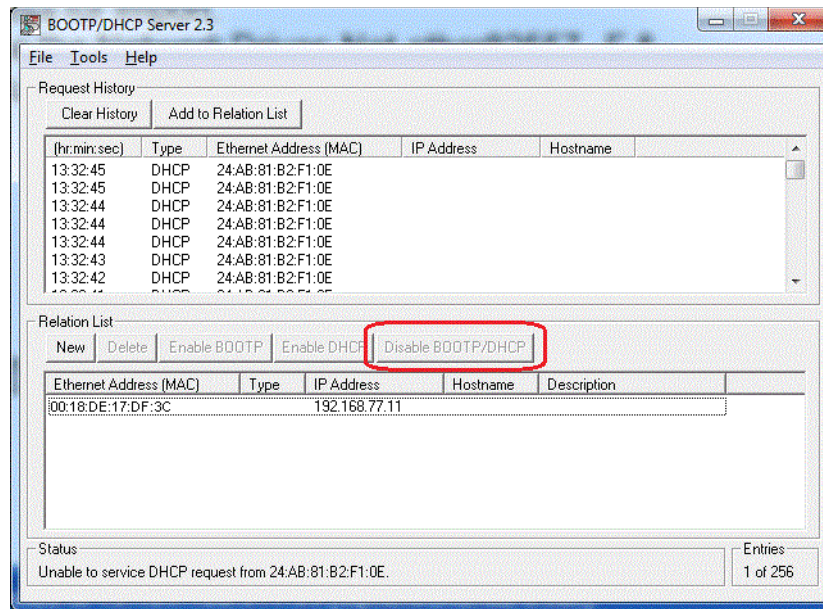
Description:

OK Cancel

5. Enter 192.168.77.11 as the IP Address and click OK.

Note: IP Addresses should range from 192.168.77.10 - 192.168.77.19 for Fieldbus Controllers, Phoenix EIP or Flex I/O EIP.

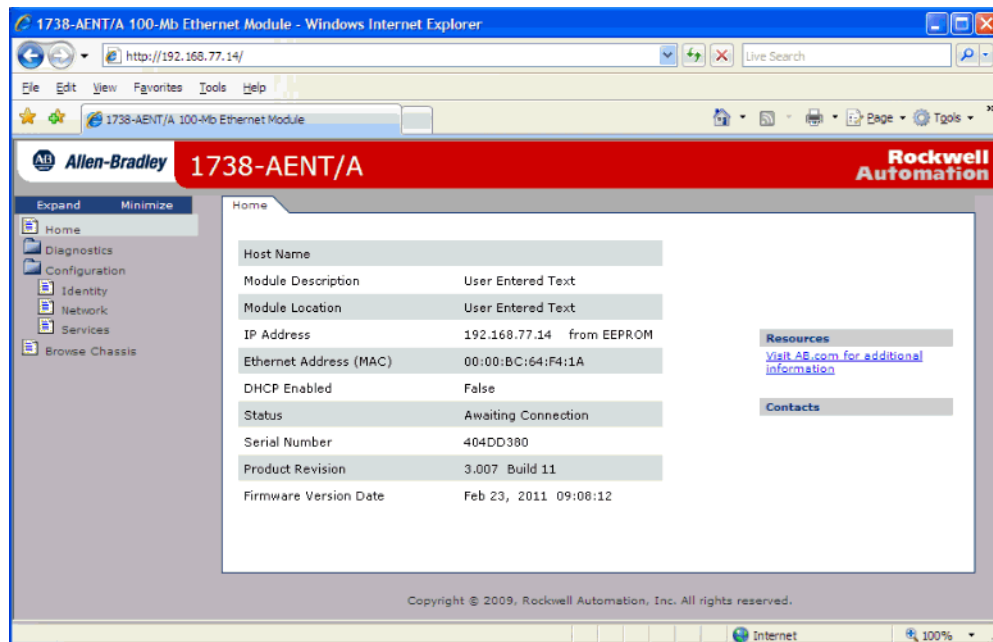
6. Select the controller in the Relation List as shown next and click the "Disable BOOTP/DHCP" button.



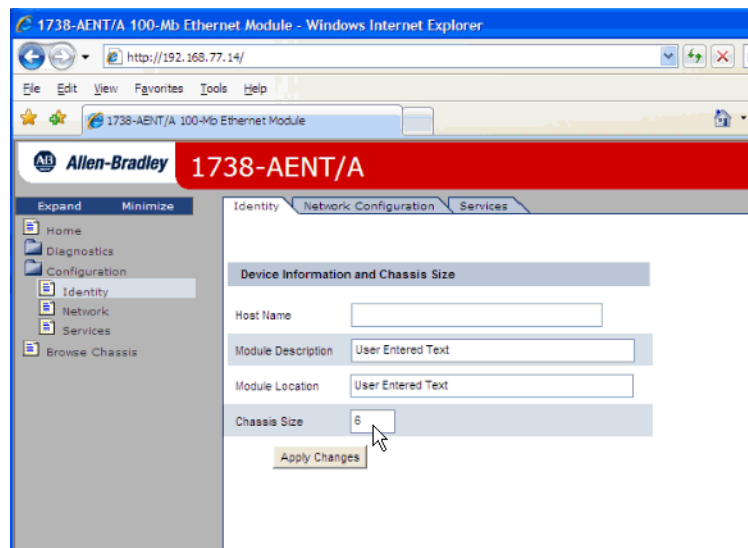
7. Exit the BOOTP/DHCP server.

For 1738-AENT's Only, do the following:

8. Open Internet Explorer and connect to <http://192.168.77.xx> (where xx is the last octet of the 1738's IP Address). This opens the Allen-Bradley 1738 web server.



9. On the menu at the left of the web server window, select **Configuration > Identity** then login with "admin" as the user and "password" as the password.
10. On the Configuration window, enter the Chassis Size (controller plus number of IO modules) and click "Apply Changes".

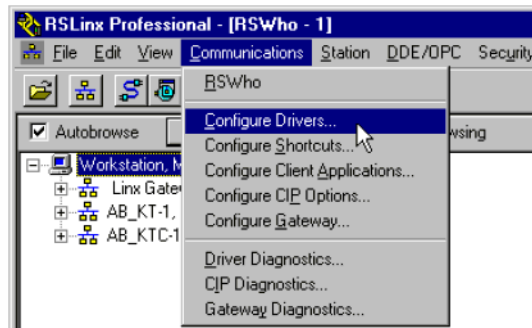


11. Cycle power on the 1738 unit. The Indicator LEDs should now be green.

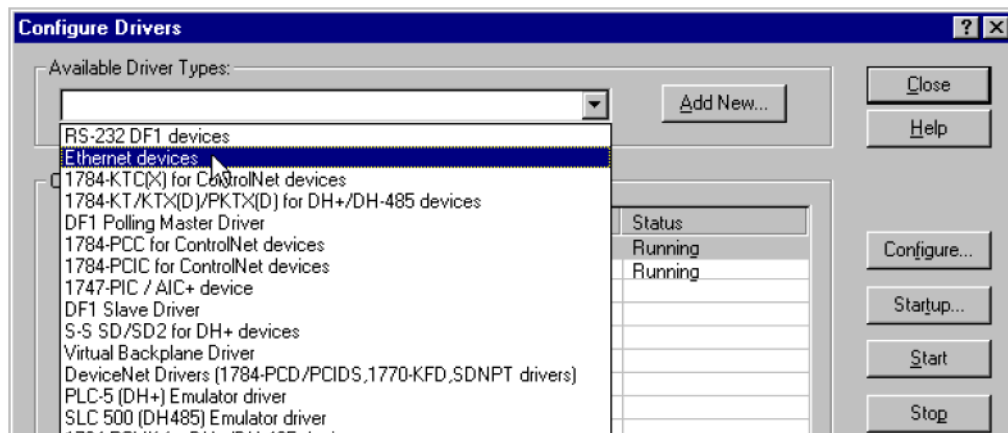
Allen-Bradley 1738 and 1794 - Driver Configuration

This section explains how to configure the AB_ETH Communication Driver so that the Allen-Bradley Communication Adapter(s) can be accessed over the network for configuration and diagnostic activities.

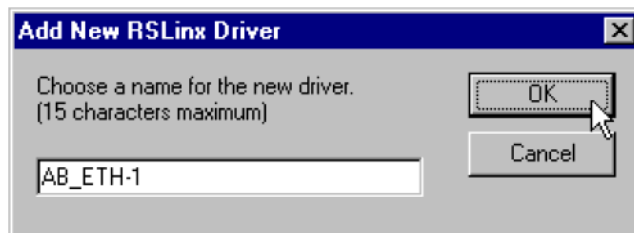
1. **Make sure RSLinx has been installed from the COMMANDbatch/Tools DVD.**
2. **Start RSLinx.**
3. **From the Communications menu, select "Configure Drivers".**



4. **Under Available Driver Types, select "Ethernet devices".**



5. **Click on the Add New button.**
6. **When prompted to name the new driver, leave the default (AB_ETH-1) and click OK.**

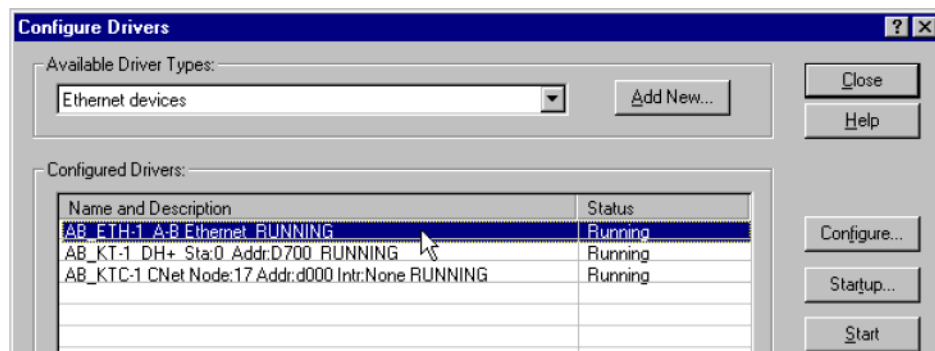


7. From the Configure driver window, click Add New and enter the IP Address of the Allen-Bradley controller, starting with 192.168.77.11.

Note: The IP Address might be different, depending upon your system configuration. All adapters have unique IP Addresses.



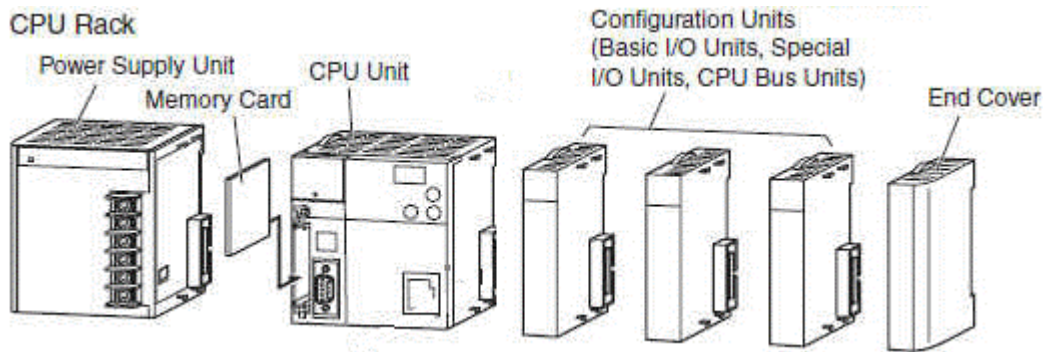
8. Repeat step 7 to add an IP Address for each additional controller. The second controller's IP Address would be 192.168.77.12, the third's 192.168.77.13, etc.
9. Click Apply and then OK to close the Configure driver window.
The new driver is now listed under Configured Drivers.



10. Close RSLogix.

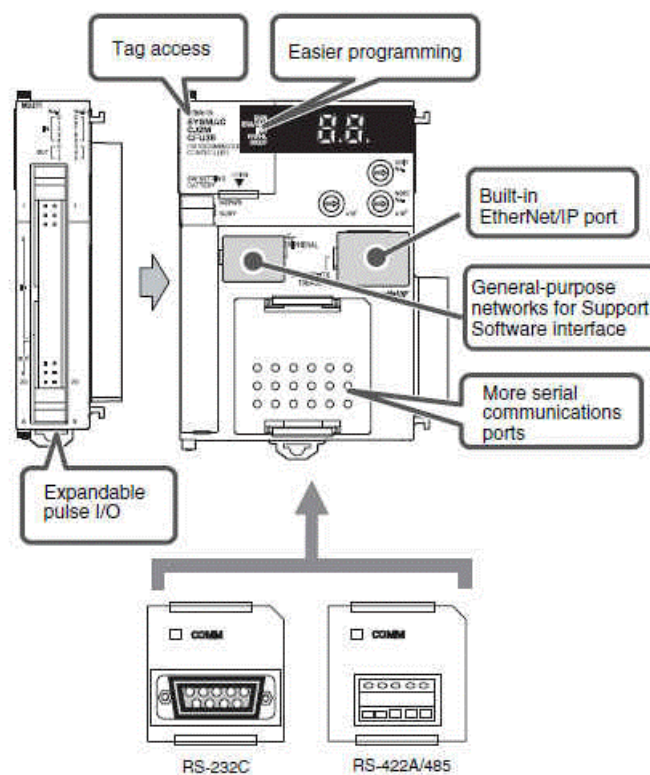
Omron CJ2M-CPU31

This section describes the setups needed to make the Omron CJ2M-CPU31 PLC controller work with COMMANDbatch-OS (Open Solution).



As indicated by the following graphic, the CJ2M-CPU31 has a built-in EtherNet/IP port, a general-purpose network connection for interfacing to Support Software, Tag Access which can be utilized by COMMANDbatch-OS, and several additional Serial communications ports.

Omron CJ2M-CPU31 PLC Controller



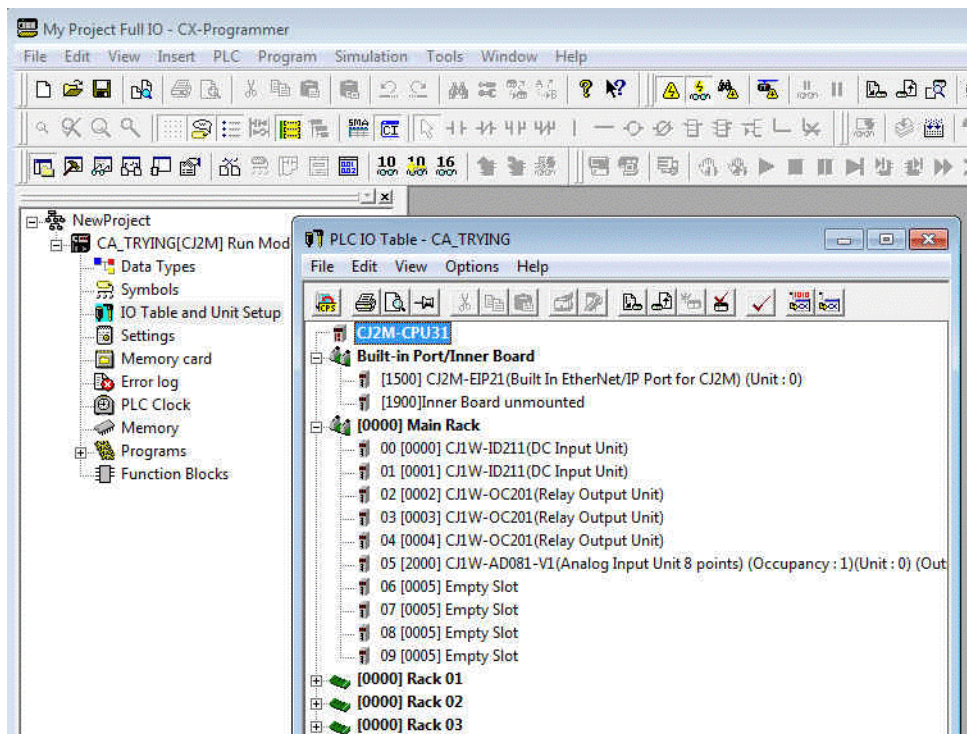
CJ2M - Setting the IP Address

1. If the current IP is known, connect CX-Programmer via the EtherNet Cable. If the current IP is unknown, connect CX-Programmer via a USB Cable.
2. Using CX-Programmer, set the IP address in Unit Settings.
3. Transfer Settings (PC to Unit).
4. Set the CJ2M Unit No. switch to Zero.
5. Set the CJ2M Node No. switches to the last octet of the IP address (in hexadecimal).
6. Power cycle the CJ2M and watch for the correct IP and Node display on the LED.
7. Test the EtherNet connection via Ping and CX-Programmer.

CJ2M - Validate Hardware Configuration

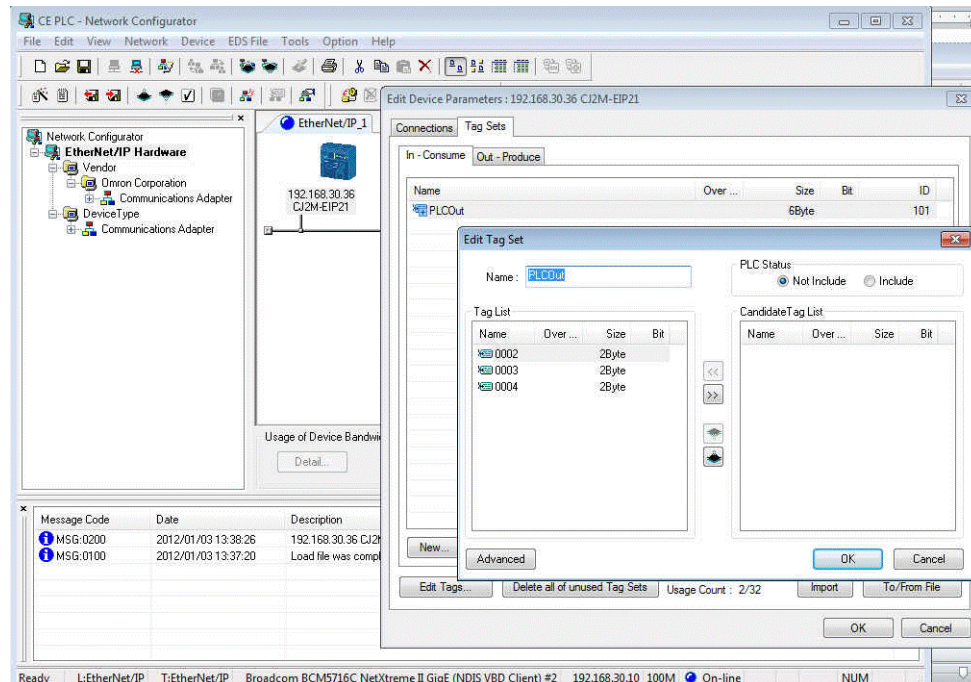
Using CX-Programmer, validate that the PLC IO Table matches the actual hardware configuration.

Sample Only - Your layout will depend on your system's configuration.



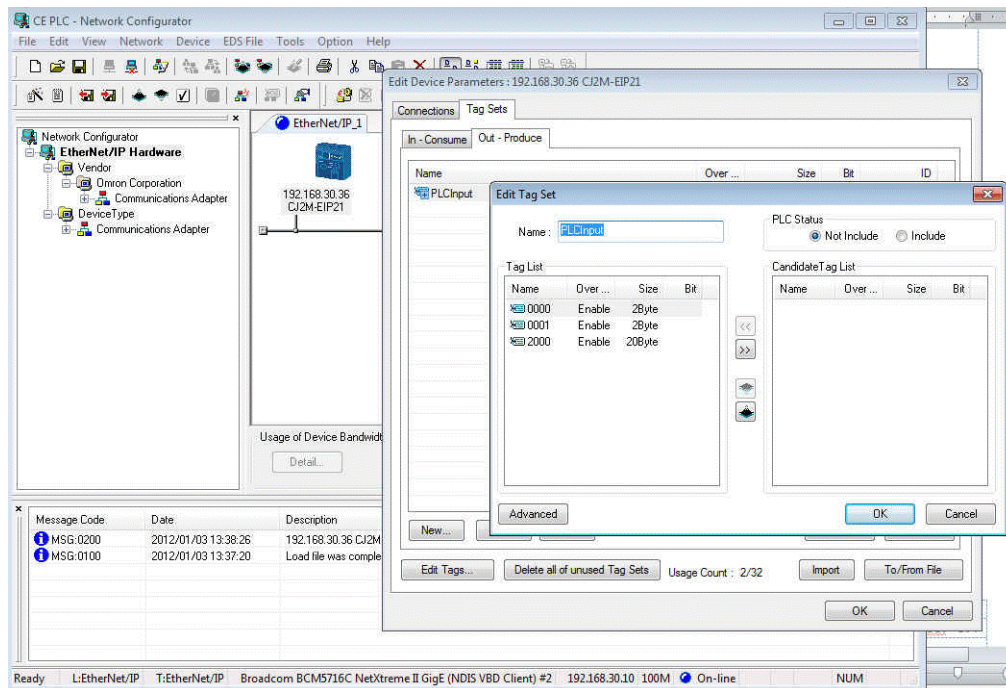
CJ2M - Configure DataLink Tag Set

1. **Connect to the Network.**
2. **Using Network Configurator, configure the Data Link Tag Set and contents.**
3. **On the In-Consume tab for Output Points (2 bytes per DO Module), set the Advanced Instance Number to 101.**



4. **On the Out-Produce tab for Input points DI, AI, and Scale mappings, set the Advanced Instance Number to 100.**

Note: Each DI Module requires 2 bytes and each AI Module requires 20 bytes. Scale mapping (DeviceNet Adapter) requires 64 Words (128 bytes), one word for each sub-node connected to the Adapter.



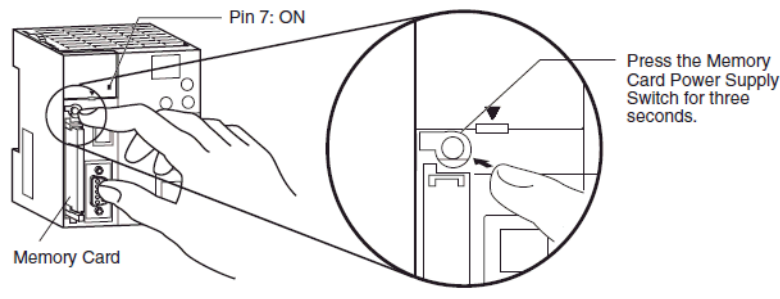
5. Download the configuration to the network (stores Data Link parameters within the CJ2M PLC).
6. Replace the CJ2M Program with the Initialization/Watchdog PLC program developed for COMMANDbatch (instructions to be added later to this document).
7. Configure the CJ2M in COMMANDbatch (see [COMMANDbatch Setups - EtherNet/IP Devices](#)).

Omron CJ2M-CPU31 - Backing Up Data from CPU Unit

1. Insert the Memory Card into the CPU Unit.

The MCPWR indicator will light and the BUSY indicator will flash (meaning the Memory Card is being accessed) and then turn OFF.

2. Turn ON pin 7 on the CPU Unit's DIP switch.
3. As shown in the following diagram, press the Memory Card Power Supply Switch for three seconds until the BUSY indicator lights, and then release the switch.



The PLC will start backing up data to the Memory Card. The MCPWR indicator will flash once and then light while the data is being written. At the same time the BUSY indicator will flash. The MCPWR and BUSY indicators will both turn OFF when the operation is completed normally.

4. Turn OFF pin 7 on the CPU Unit's DIP switch.

Omron CJ2M-CPU31 - Restoring Data from CPU Unit

1. Turn OFF the PLC power supply.

2. Insert the Memory Card containing the backup files into the CPU Unit.

3. Turn ON pin 7 on the CPU Unit's DIP switch.

4. Turn ON the PLC power supply.

The PLC will start restoring the data from the Memory Card. The MCPWR indicator will flash once and then light while the data is being read. At the same time the BUSY indicator will flash.

The MCPWR and BUSY indicators will both turn OFF when the operation is completed normally. If the MCPWR indicator flashes five times, or if only the BUSY signal turns OFF, it means that an error has occurred. (Refer to the "Verifying Backup Operations with Indicators" section of the CJ2 CPU Unit Hardware User's Manual.)

5. Turn OFF pin 7 on the CPU Unit's DIP switch.

- Notes:**
- The backup function will override the automatic transfer at startup function, so the backup files will be read to the CPU Unit when the PLC is turned ON even if pin 2 of the DIP switch is ON.
 - Data will not be read from the Memory Card to the CPU Unit if pin 1 of the DIP switch is ON (write-protecting program memory).

Pulse Rate and Duty Cycle - Omron CJ2M-CPU31

Model Number	Omron CJ2M-CPU31	
Input Voltages	24vDC	110vAC, 220vAC, 50/60 HZ
Pulse Rate	20 counts per second	15 counts per second
Duty Cycle	50/50	50/50

Phoenix Modbus ILC150 (Legacy)

Legacy PWS systems use the Phoenix ILC150 Controller as shown below. The controller includes the Ethernet connector (top of photo), the black Power module, and the Output and Input modules under that.

Phoenix ILC150 Controller

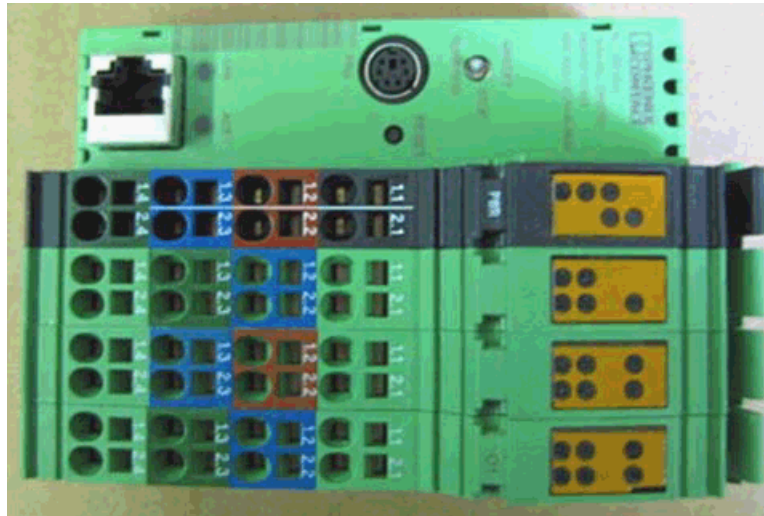
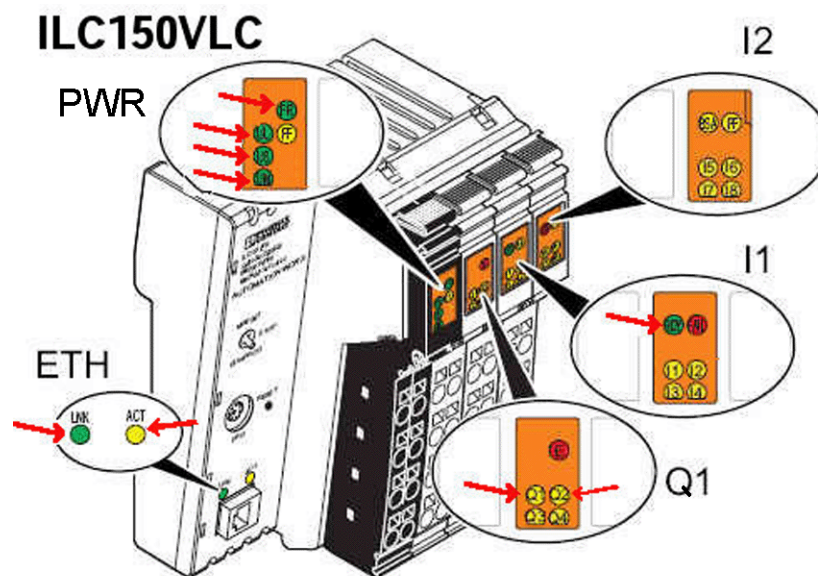


Diagram of Phoenix ILC150 Diagnostic Indicators



During normal operation of the ILC150 Controller:

- Above the power wiring, 4 GREEN indicators should be illuminated.
- Above the Ethernet Connector, the LNK GREEN indicator should be illuminated and the YELLOW ACT indicator should be blinking.
- On the I1 group of indicators, the GREEN RDY should be illuminated.

- If COMMANDbatch is communicating with the MIC, the YELLOW Q1 indicator should be blinking. If no communications are taking place, the YELLOW Q2 indicator will be steadily illuminated.

Descriptions of the ILC150 Indicator LEDs.

Label	Color	Meaning
ETH		
LNK1	Green	Connection established.
	On	Able to contact another device.
ACT	Yellow	Transmission activity.
	On	Transmitting or Receiving.
PLC/POWER		
FR	Green	Controller Run Status.
	Off	Controller Runtime stopped.
	Flashing	Runtime system initialized.
	On steady	Runtime in Run state.
FF	Yellow	Failure.
	On	Runtime program error.
	Off	Runtime program OK.
INTERBUS Diagnostics - Top of I1 and I2		
RDY	Green	INTERBUS Status.
	Flashing	INTERBUS Active and Ready.
	On	INTERBUS Running.
FAIL	Red	Failure.
	On	Bus or Controller Error.
BSA	Yellow	Bus Segment Aborted.
	On	One or more Bus Segments are switched off.
PF	Yellow	Peripheral Fault.
	On	Peripheral fault on one of the Modules.
O1 - Integrated Output		
Q1	Yellow	Output On/Off Status.
	Blinking	Used by the internal Controller program to indicate that the COMMANDbatch RTC is polling for data.
Q2	Yellow	Output On/Off Status.
	On	Used by the internal Controller program to indicate that polling is not functioning and all other Outputs have been turned Off for safety.
Q3	Yellow	Output On/Off Status.
	On	Not utilized by PWS.

Label	Color	Meaning
Q4	Yellow	Output On/Off Status.
	On	Not defined yet.
I1 and I2 - Integrated Digital Inputs		
I1 thru I8	Yellow	Input On/Off Status.
	On	Not utilized by PWS.
PWR - Controller Input Power Status		
UL	Green	24V supply UILC for generating the voltages UL and UANA.
	On	Supply voltage present (indication if 24V supply voltage UILC present).
US	Green	24V supply for segment circuit.
	On	Supply voltage present.
UM	Green	24V supply for main circuit.
	On	Supply voltage present.

Note: Under normal conditions, all Power (UL, US, and UM), Controller Run (FR), and INTERBUS Active and Ready (RDY) indicators should be ON steady and the Q1 indicator should be blinking while the Precision Water System software is functioning.

Phoenix Modbus ILC150 (Legacy) - IP Setup



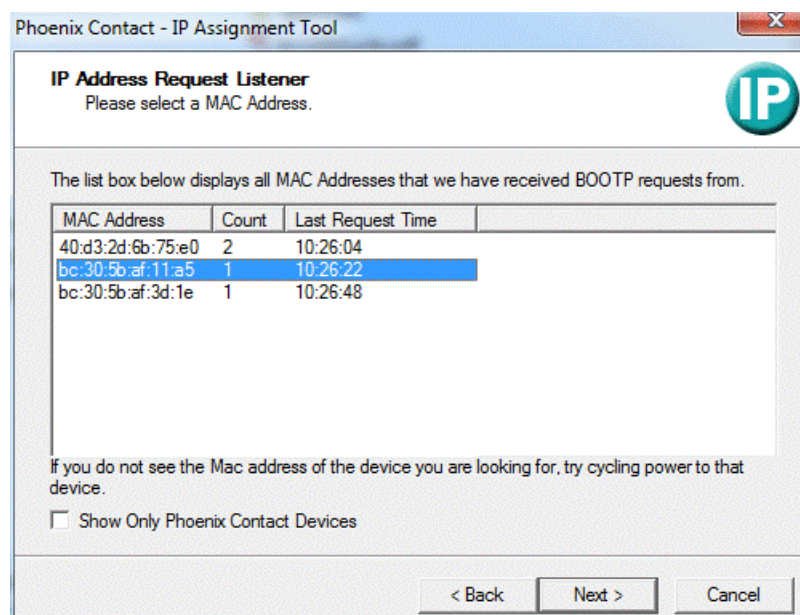
Assumption:

The following procedure assumes that the controller and IO modules are mounted, that the network and power cables are connected, and that the unit is communicating with COMMANDbatch.

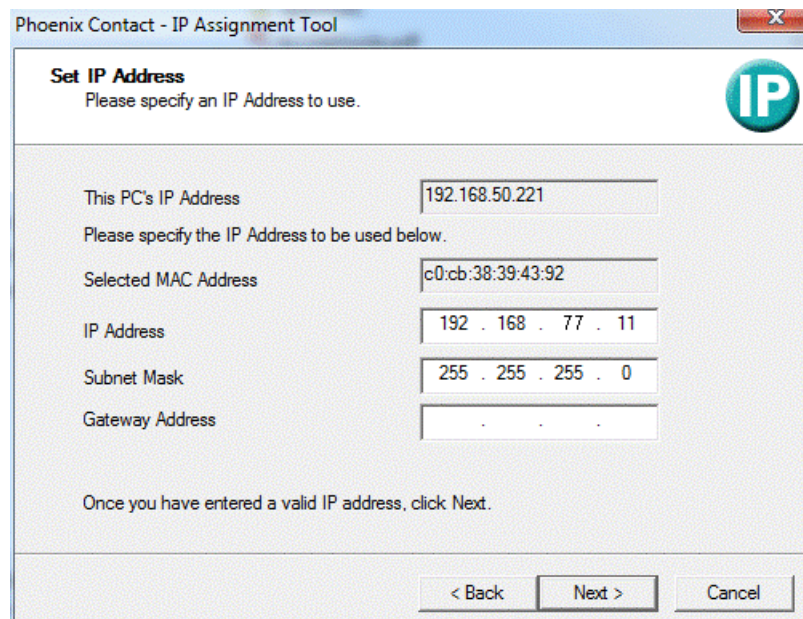
1. Open the IP Assignment Tool.



2. Click Next.



3. **Select the Phoenix device whose IP address needs changed then click Next.**



The screenshot shows a Windows-style dialog box titled "Phoenix Contact - IP Assignment Tool". Inside the dialog, there is a section titled "Set IP Address" with the instruction "Please specify an IP Address to use." and a green circular icon with the letters "IP". Below this, there are several input fields: "This PC's IP Address" (containing 192.168.50.221), "Please specify the IP Address to be used below.", "Selected MAC Address" (containing c0:cb:38:39:43:92), "IP Address" (containing 192 . 168 . 77 . 11), "Subnet Mask" (containing 255 . 255 . 255 . 0), and "Gateway Address" (containing . . .). At the bottom, there is a message: "Once you have entered a valid IP address, click Next." and three buttons: "< Back", "Next >", and "Cancel".

4. **Enter a valid IP address and click Next.**

- Notes:**
- IP Addresses should range from 192.168.77.10 - 192.168.77.19 for Fieldbus Controllers, Phoenix EIP or Flex I/O EIP.
 - If several minutes have elapsed and the application has not saved the IP Address, restart the Phoenix equipment.

IP Address Assignments

Here is a list IP Addresses to be used when you assign them to external components/hardware that connect to the CBControlNet network.

IP Address	Component / Adaptor	Notes
192.168.77.1	Managed Switch (Gateway and DNS)	For virtual networks
192.168.77.2	RTC Ethernet NIC (Plant 1 Control Network)	
192.168.77.2	vRTC Ethernet NIC	
192.168.77.3	Main COMMANDbatch PC or Host PC (second Ethernet connection named "CBControlNet")	
192.168.77.4	RTC Ethernet NIC (Plant 2 Control Network)	
192.168.77.5	RTC Ethernet NIC (Plant 3 Control Network)	
192.168.77.6		
192.168.77.7	USB Ethernet Adapter for diagnostics (Plant 3 Control Network)	
192.168.77.8	USB Ethernet Adapter for diagnostics (Plant 2 Control Network)	
192.168.77.9	USB Ethernet Adapter for diagnostics (Plant 1 Control Network)	
192.168.77.10	Open Solution Hardware with Admix Extension, PWS, PTS, Etc.	Use next available IP address in range 10-19.
192.168.77.11		
192.168.77.12		
192.168.77.13		
192.168.77.14		
192.168.77.15		
192.168.77.16		
192.168.77.17		
192.168.77.18		
192.168.77.19		
192.168.77.20	Open Solution Hardware with EtherNet/IP Scale Indicator	Use next available IP address in range 20-29.
192.168.77.21		
192.168.77.22		
192.168.77.23		
192.168.77.24		
192.168.77.25		

IP Address	Component / Adaptor	Notes
192.168.77.26		
192.168.77.27		
192.168.77.28		
192.168.77.29		
192.168.77.150	VM Fiber Feeders 1 (Plant 1 Control Network)	
192.168.77.151	VM Fiber Feeders 2 (Plant 2 Control Network)	
192.168.77.152		
192.168.77.199		Reserved
192.168.77.200	E-Z CAL IP Manual Station 1 (Plant 1 Control Network)	Use next available IP address in range 200-209.
192.168.77.201	E-Z CAL IP Manual Station 2 (Plant 1 Control Network)	
192.168.77.202		
192.168.77.203		
192.168.77.204	E-Z CAL IP Manual Station (Plant 2 Control Network)	
192.168.77.205		
192.168.77.206		
192.168.77.207		
192.168.77.208		
192.168.77.209		
192.168.77.210	E-Z CAL IP J-Box 1 (Plant 1 Control Network)	Use next available IP address in range 210-219.
192.168.77.211	E-Z CAL IP J-Box 2 (Plant 1 Control Network)	
192.168.77.212		
192.168.77.213		
192.168.77.214	E-Z CAL IP J-Box (Plant 2 Control Network)	
192.168.77.215		
192.168.77.216		
192.168.77.217		
192.168.77.218		
192.168.77.219		
192.168.78.2	vRTC Control Network	
192.168.78.3	TenAsys Virtual Adapter	